BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.00...3.10 Prestroke mm : (2.95...3.15) Note remarks Rack travel in mm : 9,00...12.00 Firing order : 6-2-4-1-5-3 Test sheet : MAN 11,1 a? : 02.01.90 Edition : 10.85 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 402 046 208 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720LS388 : 0 412 026 030 EP type number BASIC SETTING Governor Governor design. : RQ250/1100PA509 1st speed rpm: 750 Governer no. : 0 421 801 117 Rack travel in mm : 11.40...11.50 Customer-spec. information Customer : MAN Del.quantity cm3/: 17.8...18.0 : D2566MKF 100 s: (17.5...18.3) Engine : 206.0 1st version kW cm3 : 0.5Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Rack travel in mm : 6.2...6.4 Del.quantity cm3/ : 1.2...1.8 Test oil inlet temp. °C : 38...42 100 s: (0.9...2.1) Overflow valve cm3 : 0.8 Spread : 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 assembly rpm : 600 Rack travel in mm : 19.20...20.80 Opening | : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar Orifice plate 1st version Speed rpm : 750 Aneroid pressure h: 700 diameter mm : 0.8 : 178.0...180.0 Del.quantity Test lines : 1 680 750 067 1000 : (175.0...183.0) : 5.00 cm3 Spread Cutside diameter 1000 : (9.00) x Wall thickness : 6.00x1.50x1000 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed : 600 rpm Rack travel in mm : 20.0 BEGINNING OF DELIVERY Test pressure, bar: 25...27

1st rack travel in: 9.20

rpm : 1145...1160 Speed Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1400 Speed rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 6.3 Testina: Speed : 100 rpm Minimum rack trave: 7.80 Speed : 250 rpm Rack travel in mm : 6.20...6.40 Rack travel in mm : 2.00 Speed : 335...375 rpm **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm : 0.50 Torque control curve - 1st version rpm : 750 1st speed Rack travel in m: 11.40...11.50 Speed rpm : 1100 2nd speed Rack travel in m: 10.20...10.30 3rd speed rpm : 875 Rack travel in m: 11.10...11.30 th speed rpm : 985 Rack travel in m: 10.40...10.70 4th speed Speed Aneroid/Altitude Compensator Test LOW IDLE Speed 1st version Setting Speed : 500 rpm hPa : 700 Pressure Spread Rack travel mm : 11.40...11.50 Measurement Remarks: 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.20...9.30 2nd pressure hPa : 310 Rack travel in m: 10.30...10.40 3rd pressure hPa : 430 Rack travel in m: 10.90...11.10 START CUT-OUT 1/min: 170 (190) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

rpm : 1100 Del.quantity cm3/: 160.0...166.0 1000 s: (157.0...169.0) Aneroid pressure h: 700 : 650 rom Del.quantity cm3/: 171.0...177.0 1000 s: (168.0...180.0) Aneroid pressure h: 310 Speed rpm : 500 Del.quantity cm3/ : 131.0...137.0 1000 s: (128.0...140.0) 500 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 104.0...106.0 1000 s: (101.0...169.0) 1mm rack travel less than full load rack tr: 9.20 rpm : 1145...1160 STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 205.0...225.0 1000 s: (201.0...229.0) rpm : 250 Rack travel in mm : 6.20...6.40 Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) cm3 : 8.00 1000 s: (12.00) : MAN-NR. 2-7083

Note remarks

Test sheet : UNI 8,1 a 3
Edition : 20.12.91
Replaces : 29.11.91
Test oil : ISO-4113

Combination no. : 0 402 046 347

Injection pump

Pump designation : PES6P110A72ORS530 EP type number : 0 412 016 075

Governor

Governor design. : RQV450...1075PA1016-

3

Governer no. : 0 421 813 968

Customer-spec. information
Customer : IVECO-UNIC

Engine : 8365.25.584

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.6)

Spread cm3: 0.4

100 s: (0.7)

2nd speed rpm : 450.0 Rack travel in mm : 6.0...6.4 Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.4 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1135

travel mm : 7.00...7.20

2nd speed rpm : 450 travel mm : 0.70...1.10

3rd speed rpm : 700 travel mm : 3.30...3.90

travel mm : 3.30 4th speed rpm : 950

travel mm : 5.60...6.00

5th speed rpm : 1650

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1430 Rack travel in mm : 8.50...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1075 Aneroid pressure h: 700

Del.quantity : 122.0...124.0 1000 : (119.5...126.5)

Spread cm3 : 4.00

1000 : (7.50)

## RATED SPEED

1st version Control lever

position degrees: 96...104

Testing:

1st rack travel in: 9.80

rpm : 1130...1140 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1450

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

Speed : 350 rpm Minimum rack trave: 9.00 : 450 Speed rpm

Rack travel in mm : 6.10...6.30 Rack travel in mm : 2.00

: 490...550 Speed rom

Aneroid/Altitude Compensator Test

1st version

Setting

Speed man : 500 hPa : 700 Pressure

: 10.80...10.90 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 480

Rack travel in m: 10.40...10.50

3rd pressure hPa : 440

Rack travel in m: 9.90...10.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm\_ : 700

Del.quantity cm3/: 126.0...130.0 1000 s: (123.0...133.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 93.0...95.0 1000 s: (90.5...97.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.80

rpm : 1130...1140 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 185.0...215.0 1000 s: (181.0...219.0)

LOW IDLE

Del.quantity cm3/: 17.0...22.0

1000 s: (14.5...24.5)

Spread cm3 : 4.50

1000 s: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 12,0 a : 16.02.90 : 3.85 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 046 719 Injection pump Pump designation : PES6P120A320RS3070 EP type number : 0 412 026 703 Governor Governor design. : RQV250...1100PA495 : 0 421 813 236 Governer no. Customer-spec. information Customer : RVI Engine : MIDR 063540 1st version kW : 223.6 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_ BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order Phasina : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING

rpm : 11001st speed Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 19.3...19.5 100 s: (19.0...19.8)

Spread cm3 : 0.5100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 0.90...1.00 travel mm

: 800 2nd speed rom : 4.60...4.80 travel mm : 1100 3rd speed rpm

: 7.60...7.80 travel mm

GUIDE SLEEVE POSITION Control-lever position Degree: -1

Speed rpm : 1160 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1100 Speed Aneroid pressure h: 700

: 193.0...195.0 Del.quantity 1000 : (190.0...198.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 120...128

Testing:

1st rack travel in: 11.90

Speed rpm : 1160...1170

2nd rack travel in: 4.00

Speed rpm : 1235...1265 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 64...72

Testing:

: 200 Speed LIDIII Minimum rack trave: 6.50 rpm : 300

Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

rpm : 290...400 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 700

Rack travel mm : 12.90...13.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.70

2nd pressure hPa : 290
Rack travel in m: 12.50...12.60
3rd pressure hPa : 210
Rack travel in m: 11.00...11.40

START CUT-OUT

Speed 1/min : 190 (210)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 1100 Speed

Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 150.0...170.0

1000 s: (146.0...174.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.80...5.00 Del.quantity cm3/ : 14.0...20.0 1000 s: (11.0...23.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

Start-of-delivery mark 12° cam angle after start of delivery cyl. 1.

Note remarks

Test sheet Edition

: BAO 15.9 c : 06.07.90

Replaces Test oil : 5.85 : ISO-4113

Combination no.

: 0 402 046 753

Injection pump

Pump designation : PES6P130A320RS3133

EP type number

: 0 412 036 702 Governor

Governor design. Governer no.

: RQV350...900PA618

: 0 421 813 327

Customer-spec, information Customer : BAUDOUIN

Engine

: 6P15-SRCE

1st version kW

: 368.0

: 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test Lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasina

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

Spread

rpm: 900

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 30.8...31.1

100 s: (30.4...31.4)

cm3 : 0.6

100 s: (1.0)

2nd speed

rpm : 350.0

Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 2.0...2.6

100 s: (1.6...3.0) cm3 : 1.0

Spread

100 s: (1.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.10...1.40 travel mm

: 500 2nd speed rpm

: 3.10...3.80 travel mm

: 800 3rd speed rom

travel mm

: 6.50...6.90

4th speed

rpm : 900

: 7.80...8.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed

rpm : 940

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 900

Del.quantity

: 308.0...311.0

: (304.5...314.5) 1000

Spread

cm3 : 6.00

1000 : (10.00)

#### RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 11.40 Speed rpm : 940...950 2nd rack travel in: 4.00

Speed rpm : 1005...1035 4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 20...28

Testing:

Speed rpm : 100 Minimum rack trave: 6.40 Speed rpm : 350

Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

rpm : 350...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.40 : 940...950 Speed rpm

Remarks:

APPLICATION

Navy

Note remarks

: ROL 12,2 i1 : 18.12.91 Test sheet Edition

Replaces : 20.9.91 Test oil : ISO-4113

Combination no. : 0 402 046 779

Injection pump

Pump designation : PES6P120A320RS3170-1

EP type number : 0 412 026 726

Governor

Governor design. : RQ750PA826-1 Governer no. : 0 421 801 366

Customer-spec. information Customer : PERKINS

Engine : EAGLE LE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

firing order : 1-4-2-6-3-5

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 13.10...13.20

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : J.8 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 212.0...214.0 1000 : (209.0...217.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Testina:

1st rack travel in: 12.10 rpm : 750...755 Speed 2nd rack travel in: 4.00

Speed

: 776...791 mar 4th rack travel in: 900

: 0.00...1.00 Speed rpm

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 750...755 Speed

A09

# STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 180.0...220.0 1000 s: (176.0...224.0)

Remarks:

APPLICATION

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.50...3.60 : (3.45...3.65) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : RVI 9,8 f 1 : 18.12.91 Test sheet Edition : 14.4.89 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 046 789 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6P120A320RS3139 : 0 412 026 718 EP type number 1st speed rpm: 1000 Governor Governor design. : RQV275...1000PA728-3 Governor no. : 0 421 813 657 Rack travel in mm : 11.00...11.10 Del.quantity cm3/: 19.1...19.3 Customer-spec. information Customer : RVI 100 s: (18.8...19.6) : MIDR 062045 H Engine Spread cm3 : 0.5: 227.0 100 s: (0.9) 1st version kW Rated speed : 2000 rpm : 275.0 2nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 1.8...2.4 TEST BENCH REQUIREMENTS Test oil 100 s: (1.5...2.7) cm3 : 0.8 inlet temp. °C : 38...42 Spread 100 s: (1.2) Overflow valve : 1 417 413 025 (9) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed 250 : 1 688 901 019 assembly : 0.90...1.10 travel mm : 450 2nd speed rpm : 3.30...3.70 Opening travel mm : 800 pressure, bar : 207...210 3rd speed חמיו : 5.60...6.00 travel mm Orifice plate 4th speed : 1000 rpm diameter mm : 0,8 : 7.00...7.20 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 067 Control-lever position Degree: -1 Outside diameter rpm : 1170 Speed x Wall thickness Rack travel in mm: 15.20...17.80 x Length mm : 6.00X1.50X1000 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1000 Aneroid pressure h: 1000 per values : 191.0...193.0 Del.quantity 1000 : (188.0...196.0) BEGINNING OF DELIVERY

: 5.00

1000 : (9.00)

cm3

Spread

Test pressure, bar: 25...27

RATED SPEED

1st version

Control Lever

position degrees: 115...123

Testina:

1st rack travel in: 10.00

rpm : 1065...1075 Speed

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

Speed : 200 rpm Minimum rack trave: 7.10

Speed : 275 L Duti Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

Speed rpm : 310...415

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 1000 Speed rpm Pressure

Rack travel mm : 11.00...11.10

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 8.60...8.80
2nd pressure hPa : 280
Rack travel in m: 10.30...10.40

3rd pressure hPa : 160

Rack travel in m: 9.30...9.50

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 600 Speed

Del.quantity cm3/: 189.0...195.0 1000 s: (186.0...198.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 99.0...101.0 1000 s: (96.0...104.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 1065...1075 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.30...5.50
Del.quantity cm3/: 18.0...24.0
1000 s: (15.0...27.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

:

Start-of-delivery mark 9° cam angle

after start of delivery cyl. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RVI 6,2 f : 18.12.91 Edition Replaces : 30.11.90 Test oil : ISO-4113 Combination no. : 0 402 046 811 Injection pump Pump designation : PES6P110A320RS3233 EP type number : 0 412 016 728 Governor Governor design. : RQV275...1175PA833-4 : 0 421 813 762 Governer no. Customer-spec. information Customer : RVI Engine : MIDR 060226D 1st version kW : 166.0 : 2350 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 4.20...4.30 : (4.15...4.35) Rack travel in mm : 18.00...21.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - \*

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 13.0...14.0 Difference \* CS : 1.25...3.25

BASIC SETTING

1st speed rom: 1175

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 11.7...11.9

100 s: (11.4...12.1)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 275.02nd speed Rack travel in mm: 5.2...5.6 Del.quantity cm3/: 3.2...3.8 100 s: (2.9...4.0)

cm3 : 0.4 Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 0.40...0.60 travel mm

2nd speed rpm : 450

2.90...3.50 travel mm

rpm : 800 3rd speed

: 4.60...5.00 travel mm

: 1175 4th speed ripm

: 6.90...7.10 travel mm

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1 Speed rpm : 1330 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1175

A13

Aneroid pressure h: 1000 : 117.0...119.0 Del.quantity 1000 : (114.5...121.5) : 4.00 cm3 Spread 1000 : (7.50) RATED SPEED 1st version Control lever position degrees: 113...121 Testing: 1st rack travel in: 12.50 rpm : 1245...1255 2nd rack travel in: 4.00 rpm : 1405...1435 Speed 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 80...88 Testina: Speed rpm Minimum rack trave: 7.70 Speed rpm : 275
Rack travel in mm : 5.30...5.50 CONSTANT REGULATION rpm : 250...350 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 1000 Pressure Rack travel mm : 13.50...13.60 Measurement 1/min: 500 Speed 1st pressure hPa : Rack travel in m: 9.40...10.00 2nd pressure hPa : 440 Rack travel in m: 12.60...12.70 3rd pressure hPa : 200 Rack travel in m: 10.50...10.90

1st version Aneroid pressure h: 1000 Speed rpm : 700 Del.quantity cm3/ : 113.5...118.5 1000 s: (110.5...121.5) Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 51.0...53.0
1000 s: (48.5...55.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.50 rpm : 1245...1255 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 85.0...105.0 1000 s: (81.0...109.0) LOW IDLE Speed rpm : 275
Rack travel in mm : 5.20...5.60 Del.quantity cm3/: 32.0...38.0 1000 s: (29.5...40.5) Spread cm3 : 4.50 1000 s: (7.50) Remarks: Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Speed

START CUT-OUT

1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : SAC 19,1 a : 12.01.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 046 813

Injection pump

Pump designation : PES6P110A320LS3246

EP type number : 0 412 016 732

Governor

Governor design. : RQV300...750PA874

: D 421 813 663 Governer no.

Customer-spec. information Customer : SACM

Engine : UD150-L6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-5- 3- 6- 2- 4 Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 750

Rack travel in mm: 13.00...13.10

Del.quantity cm3/: 24.4...24.7

100 s: (24.1...24.9)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.0 2nd speed Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 1.8...2.3

100 s: (1.5...2.5)

cm3 : 0.4 100 s: (0.7) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.40 travel mm rpm : 500 2nd speed

: 4.00...4.40 travel mm

: 750 3rd speed rpm : 7.70...7.90 travel mm

4th speed : 1000

rpm

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 770 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 750

244.0...247.0 1000 : (241.5...249.5) Del.quantity

Spread : 4.00 cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever position degrees: 118...126 Testina: 1st rack travel in: 12.00 Speed rpm : 790...800 2nd rack travel in: 4.00 Speed rpm: 840...870 4th rack travel in: 950 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 63...71 Testing: Speed rpm : 100 Minimum rack trave: 6.10 Speed rpm : 300 Rack travel in mm : 4.50...4.70 CONSTANT REGULATION rpm : 310...410 Speed START CUT-OUT 1/min: 220 (240) Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 Speed rpm : 790...800 Speed LOW IDLE Speed rpm: 300 Rack travel in mm: 4.50...4.70 Del.quantity cm3/: 18.0...23.0 1000 s: (15.5...25.5) Spread cm3 : 4.50 1000 s: (7.50) Remarks: **APPLICATION** Navy

Note remarks

Test sheet Edition

: RVI 12,0 g1 : 25.01.91

Replaces

Test oil

: ISO-4113

Combination no.

: 0 402 046 820

Injection pump

Pump designation : PES6P120A320RS3136-1

EP type number

: 0 412 026 744

Governor

Governor design. : RQ750PA597

Governer no.

: 0 421 801 150

Customer-spec, information Customer : RVI

Engine

: MIDR 063540

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test Lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - °

Firing order

: 0.50 (0.75)

BASIC SETTING

1st speed

Phasing

rpm: 700

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 33.1...33.3

100 s: (32.8...33.6)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed

rpm : 250.0

Rack travel in mm : 4.8...5.0 Del.quantity cm3/: 1.5...2.1

Spread

100 s: (1.2...2.4) cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Del.quantity

: 331.0...333.0

Spread

1000 : (328.0...336.0) : 5.00

cm3 1000 : (9.00)

RATED SPEED

1st version

Testina:

1st rack travel in: 13.80 Speed rpm : 750...755

2nd rack travel in: 4.00

Speed

rpm : 775...785

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.80

rom

: 750...755

Remarks:

Speed

# APPLICATION

Generator set

### Note remarks

Test sheet : AIF 11,6 a Edition : 18.12.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 076 058

Injection pump

Pump designation : PES6P120A700RS532-1

EP type number : 0 412 026 061

Governor

Governor design. : RSV300...1200P0A552

Governer no. : 0 421 833 368

Customer-spec. information : IVECO-AIFO Customer

Engine : 8361 SRM 37

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-Firing order

A19

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Del.quantity : 234.0...236.0

: (231.0...239.0) 1000 : 5.00 cm3

Spread : (9.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 98...106

Testing:

1st rack travel in: 12.50

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

: 1295...1325 Speed man

4th rack travel in: 1450

: 0.30...1.40 Speed rpm

LOW IDLE 1 Control Lever position degrees: 66...74 Setting point w/out bumper spring : 300 Speed rpm : 300 Rack travel in mm : 4.0 Testing: : 100 : 300 Speed mgn Speed rpm Rack travel in mm : 4.40...4.60 Rack travel in mm: 2.00 Speed : 335...395 rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 13.50...13.60 nd speed rpm : 550 Rack travel in m: 13.50...13.70 2nd speed 3rd speed rpm : 350 Rack travel in m: 14.70...15.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rom hPa : 900 Pressure Rack travel mm : 13.50...13.60 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 12.00...12.20 2nd pressure hPa : 400 Rack travel in m: 12.90...13.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.50 Speed rpm : 1240...1250 Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.55...3.65 : (3.50...3.70) Prestroke mm Note remarks Rack travel in mm: 10.50 : DEE 7,6 y Test sheet : 1-5-3-6-2-4 Firing order : 18.12.91 Edition Replaces : 10.4.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 076 723 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6P120A720RS3203 Time to cyl. no. : 1 : 0 412 026 728 EP type number Governor BASIC SETTING Governor design. : RSV400...1100P2A534-1st speed rpm: 1100 : 0 421 833 276 Governer no. Rack travel in mm : 11.80...11.90 Customer-spec. information Customer : JOHN DEERE Del.guaratity cm3/: 15.0...15.2 : 6076 AF & HF Engine 100 s: (14.7...15.4) 1st version kW : 180.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 400.0 2nd speed Rack travel in mm: 5.5...5.7 Del.quantity cm3/: 2.3...2.8 100 s: (2.1...3.1) Test oil inlet temp. °C : 38...42 Overflow valve cm3 : 0.6 Spread : 1 457 413 010 100 s: (0.8) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 assembly : 1 688 901 101 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Openina . : 207...210 pressure, bar Governor spring pre-tension Click setting x : 5.00Orifice plate diameter mm : 0,6 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test Lines : 1 680 750 015 Speed rpm : 1100 Aneroid pressure h: 1200 : 150.0...152.0 1000 : (147.5...154.5) Outside diameter Del.quantity x Wall thickness : 6.00x3.00x600 x Length mm : 4.00 Spread cm3 1000 : (6.50) (A) Injection pump setting values

RATED SPEED

1st version Control lever

position degrees: 40...48

A21

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Testing:

1st rack travel in: 10.80 Speed rpm : 1150...1160

2nd rack travel in: 4.00

rpm : 1220...1230 Speed

3rd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1350

Speed rpm : 0.30...1.40

LOW IDLE 1

Control lever

position degrees: 16...24

Setting point w/out bumper spring

nom : 400Rack travel in mm : 5.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

rpm : 400

Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.80...11.90 2nd speed rpm : 700 Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed man

hPa : 1200 Pressure

: 12.60...12.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.90

2nd pressure hPa : 720 Rack travel in m: 11.00...11.10

3rd pressure hPa : 895

Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 700 Del.quantity cm3/ : 173.5...178.5 1000 s: (171.0...181.0)

Aneroid pressure h: -

Speed rpm : 800 Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

Speed rpm : 1150...1160

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 400

Rack travel in mm: 5.50...5.70 Del.quantity cm3/: 23.5...28.5 1000 s: (21.0...31.0)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet : DEE 10,1 f : 0-60-120-180-240-300 Phasing : 15.11.90 Edition Replaces : 2.5.90 Tolerance + - ° : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 402 076 726 BASIC SETTING Injection pump Pump designation : PES6P110A720RS3209 1st speed rom : 1050EP type number : 0 412 016 722 Governor Rack travel in mm : 11.20...11.30 Governor design. : RSV400...1050P0A537 : 0 421 833 287 Governer no. Del.quaritity cm3/: 16.7...16.9 Customer-spec, information 100 s: (16.5...17.2) Customer : JOHN DEERE Spread cm3 : 0.4Engine : 6619 AT 06 100 s: (0.6) 1st version kW : 172.0 Rated speed : 2100 2nd speed rpm : 400.0Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 1.6...2.1 TEST BENCH REQUIREMENTS 100 s: (1.3...2.3) Test oil Spread cm3 : 0.6 : 38...42 inlet temp. °C 100 s: (0.8) Overflow valve GUIDE SLEEVE POSITION : 1 457 413 010 Control-lever position Degree: -3 rpm : 800 Inlet press., bar: 1.50 Rack travel in mm : 0.30...0.70 Test nozzle holder FULL LOAD DELIV. AT FULL LOAD STOP assembly : 0 681 343 009 Opening 1st version pressure, bar : 172...175 Speed rpm : 1050 Del.quantity : 167.5...169.5 1000 : (165.0...172.0) : 4.00 Test lines : 1 680 750 015 Spread cm3 1000 : (6.50) Outside diameter x Wall thickness RATED SPEED x Length mm : 6.00x3.00x600 1st version (A) Injection pump setting values Control lever Insp. values in parentheses position degrees: 39...47 Set equal delivery quant. Testing: per values 1st rack travel in: 10.20 BEGINNING OF DELIVERY Speed rpm : 1090...1100 Test pressure, bar: 27...29 2nd rack travel in: 4.00 rpm : 1150...1160 Speed : 3.45...3.55 Prestroke mm 3rd rack travel in: 4.00 rpm : 1160...1190 : (3.40...3.60) Speed

4th rack travel in: 1250

Rack travel in mm: 10.50

rom : 0.30...1.40Speed

LOW IDLE 1 Control lever

position degrees: 19...27 Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm : 4.6

Testina:

: 100 Speed rpm Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.00...5.20

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050 Rack travel in m: 11.20...11.30

2nd speed rpm : 700

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 171.5...176.5 1000 s: (169.0...179.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.20

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 175.0...195.0
1000 s: (170.0...200.0)
Rack travel in mm : 20.00...21.00

LOW IDLE

: 400 rpm

Rack travel in mm: 5.00...5.20 Del.quantity cm3/: 16.0...21.0 1000 s: (13.5...23.5)

cm3 : 6.00 Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE33898

Adjustment without torque-control

spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.55...3.65 : (3.50...3.70) Note remarks Rack travel in mm: 10.50 : DEE 7,6 y 3 Test sheet : 1-5-3-6-2-4 Firing order : 18.12.91 Edition : 22.11.91 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 076 743 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6P120A720RS3203 Time to cyl. no. : 1 EP type number : 0 412 026 728 Governor BASIC SETTING Governor design. : RSV425...1100P2A534-1st speed rpm : 1100 : 0 421 833 370 Governer no. Rack travel in mm : 11.80...11.90 Customer-spec. information Customer : JOHN DEERE Del.quantity cm3/: 15.0...15.2 : 6076 AN 030 Engine 100 s: (14.7...15.4) 1st version kW : 187.0 cm3 : 0.4Spread : 2200 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 425.0 2nd speed Rack travel in mm: 5.7...5.9 Test oil Del.quantity cm3/: 2.8...3.2 100 s: (2.5...3.4) inlet temp. °C : 38...42 Overflow valve Spread cm3 : 0.6: 1 457 413 010 100 s: (0.8) Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 assembly : 1 688 901 101 Openina : 207...210 pressure, bar Governor spring pre-tension Click setting x : 4.00Orifice plate diameter mm FULL LOAD DELIV. AT FULL LOAD STOP : 0,6 1st version Test Lines : 1 680 750 015 Speed rpm : 1100 Aneroid pressure h: 1200 Outside diameter : 150.0...152.0 Del.quantity x Wall thickness x Length mm : 6.00x3.00x600 Spread cm3 1000 (A) Injection pump setting values Insp. values in parentheses RATED SPEED

x Wall thickness
x Length mm : 6.00x3.00x600

(A) Injection pump setting values
Insp. values in parentheses
Set equal delivery quant.
per values

BEGINNING OF DELIVERY
Test pressure, bar: 27...29

1000 : (147.5...154.5)

Spread cm3 : 4.00
1000 : (6.50)

RATED SPEED

1st version
Control lever
position degrees: 43...51

Testina:

1st rack travel in: 10.80

rpm : 1150...1160 Speed

2nd rack travel in: 4.00

rpm : 1220...1230 Speed

3rd rack travel in: 4.00

rpm : 1210...1240 Speed

4th rack travel in: 1350 rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 19...27

Setting point w/out bumper spring

rom : 425 Rack travel in mm: 5.3

Testing:

Speed rom : 100

Minimum rack trave: 19.00

Speed rpm : 425 Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.80...11.90

2nd speed rpm : 700

Rack travel in m: 12.80...13.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed man hPa : 1200 Pressure

Rack travel mm : 12.80...13.00

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.70...10.90

2nd pressure hPa : 720 Rack travel in m: 11.00...11.10

3rd pressure hPa : 895

Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm: 700 Del.quantity cm3/: 173.5...178.5 1000 s: (171.0...181.0)

Aneroid pressure h: -

Speed : 800 rom

Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 425 Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 28.0...32.0 1000 s: (25.5...34.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47394

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : MB 21,9 u 2 : 20.12.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 640 836

Injection pump

Pump designation : PE12P120A320LS7805

: 0 412 620 802 EP type number

Governor

Governor design. : RQV350...1050PA781-2

: 0 421 813 948 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

: OM 444 LA Engine

: 463.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...160

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 1030 1st speed

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350 : 1.90...2.40 travel mm

2nd speed rpm : 449

: 3.00...3.50 travel mm rpm : 760 3rd speed

: 4.50...5.00 travel mm

: 1107

4th speed rpm

: 7.50...8.00 travel mm

: 1410 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1180 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed Aneroid pressure h: 700

: 214.0...216.0 Del.quantity

1000 : (211.0...219.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testina:

1st rack travel in: 13.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

: 1225...1255 Speed rpm

4th rack travel in: 1300

Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 65...73

Testing:

Speed : 200 rpm Minimum rack trave: 6.80 rpm : 350

Rack travel in mm:5.20...5.80

CONSTANT REGULATION

Speed rpm : 400...600

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 Pressure hPa:-

: 11.60...11.80 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : 335

Rack travel in m: 12.20...12.40

2nd pressure hPa : 485

Rack travel in m: 13.40...13.60

START CUT-OUT

1/min: 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm::600 Del.quantity cm3/:213.0...219.0 1000 s: (210.0...222.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 153.0...155.0 1000 s: (150.0...158.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

TESTING & SETTING RACK TRAVEL SENSOR

Supply voltage : 24.0

Remarks:

**APPLICATION** 

Rail car

Note remarks

Test sheet : SCA 11,1 n2 Edition : 06.04.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 871

Injection pump

Pump designation : PE6P12OA72ORS7170

EP type number : 0 412 626 829

Governor

Governor design. : RQ900PA758-4 : 0 421 801 468 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS 11

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.50...12.60

Del.quantity cm3/ : 24.6...24.8

100 s: (24.3...25.1)

Spread cm3 : 0.7

100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 350 Speed

: 246.0...248.0 Del.quantity

1000 : (243.0...251.0)

Spread cm3 : 7.00

1000 : (10.00)

RATED SPEED

1st version

Control Lever

position degrees: 83...91

Testina:

1st rack travel in: 11.50

Speed rpm : 900...905 2nd rack travel in: 4.00

Speed rpm : 941...955 4th rack travel in: 1000

Speed rpm : 0.00...1.00

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 900...905

STARTING FUEL DELIVERY

Speed : 100 rpm

**B01** 

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version
Rack travel in mm : 5.70...5.90
Spread cm3 : 4.00
1000 s: (7.00)

Remarks:

Start-of-delivery setting with ROBO diaphragm.

**APPLICATION** 

Generator

Generator set

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : SCA 11,1 i5 : 18.12.91 Test sheet Edition Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 402 646 900 Time to cyl. no. : 1 Injection bumb BASIC SETTING Pump designation: PE6P120A720RS7020 EP type number : 0 412 626 828 1st speed rpm: 700 Governor Governor destign. : RQV200...1000PA539 Rack travel in mm : 10.90...11.00 -13: 0 421 813 849 Governer no. Del.quantity cm3/: 15.9...16.1 Customer spec. information 100 s: (15.6...16.4) Customer : SCANIA Spread cm3 : 0.6Engine : DS11 74 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 225.0 Test oil Rack travel in mm : 4.6...5.0 Del.quantity cm3/: 1.8...2.2 100 s: (-) inlet temp. °C : 38...42 Overflow valve cm3 : 0.3Spread : 1 417 413 025 100 s: (0.6) Inlet press., bar: 1.58 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 GUIDE SLEEVE TRAVEL assembly rpm : 225 : 1.20...1.60 1st speed Opening. travel mm rpm : 350 pressure, bar : 207...210 2nd speed : 2.40...3.00 travel mm Orifice plate 3rd speed rpm : 650 diameter mm : 0.8 : 4.50...5.10 travel mm rpm : 1045 4th speed travel mm : 3.40...8.60 Test lines : 1 680 750 015 5th speed rpm : 1150 : 9.80...10.20 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.0CX1.50X600 \* Control-lever position Degree: -1 (A) Injection pump setting values rpm : 1050 Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700 Aneroid pressure h: 900 Del.quantity : 109.0...164.0)

Prestroke mm

: 5.00...5.10 : (4.95...5.15) Spread

cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control Leven

position degrees: 112...120

Testina:

1st rack travel in: 9.90

Speed rpm : 1040...1050 2nd rack travel in: 4.00

rpm : 1110...1140 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 61...69

Testina:

Speed : 100 rpm

Minimum rack trave: 6.20

Speed : 225 rom

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00

: 340...400 Speed ren

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 man

hPa : 900 Pressure

Rack travel mm : 10.90...11.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.60

2nd pressure hPa : 150

Rack travel in m: 9.90...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed : 1000 man

Del.quantity cm3/: 157.0...165.0

1000 s: (155.0...167.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 116.0...120.0 1000 s: (114.0...122.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 225 rpm

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring pretoad on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphraam.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB6,1I : 18.12.91 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 246 031 Injection pump Pump designation : PES6MW100/720RS1515 EP type number : 0 413 206 013 Governor Governor design. : RQV300...1300MW125-1 Soverner no. : 0 420 083 258 Customer-spec. information Customer : MB-NFZ : 0M366LA Engine 1st version kW : 127.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Openina** pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1,50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

> : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1300 Rack travel in mm : 12.30...12.40 Del.guantity cm3/: 10.8...11.0 100 s: (10.6...11.2) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1350 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300 Speed Aneroid pressure h: 1000 Del.quantity : 108.0...110.0 1000 : (106.0...112.0) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 110...118 Testing: 1st rack travel in: 11.30 Speed rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm: 1420...1450 4th rack travel in: 1550 : 0.00...1.00 Speed rpm

LOW IDLE 1

Prestroke mm

Control Lever

position degrees: 72...80

Setting point w/out bumper spring

rpm : 300

Rack travel in mm: 4.3

Testing:

Speed rpm : 200 Minimum rack trave: 6.00 Speed rpm

Rack travel in mm : 4.20...4.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 non Pressure hPa : -

: 8.90...9.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 10.70...10.90

2nd pressure hPa : 500

Rack travel in m: 11.90...12.10 3rd pressure hPa : 1000

Rack travel in m: 12.30...12.40

START CUT-OUT

Speed 1/min: 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed

rpm : 750 Del.quantity cm3/: 103.5...106.5

1000 s: (101.0...109.0)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 43.0...45.0 1000 s: (41.0...47.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

B06

Note remarks

: MB 6,1 I 1 : 18.12.91 Test sheet Edition

Replaces

Test oil : TSO-4113

Combination no. : 0 403 246 032

Injection cump

Pump designation : PES6MW100/720RS1515

EP type number : 0 413 206 013

Governor

Governor design. : RQV300...1300MW125-2

: 0 420 083 259 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M366LA

1st version kW : 142.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 21.00...0.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 10.8...11.0

100 s: (10.6...11.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

Del.quantity : 100.0...112.0)

: 3.50 : (6.CD) cm3

1030

RATED SPEED

1st version Control Lever

position degrees: 110...118

Testing:

1st rack travel in: 11.30

rpm : 1340...1350 Speed

2nd rack travel in: 4.00

: 1420...1450 Speed rom

4th rack travel in: 1550

Speed : 0.00...1.00 rpm

LOW IDLE 1

Control lever

position degrees: 72...80

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 4.3

Testing:

Speed : 200 rpm Minimum rack trave: 6.00

Speed rpm : 300 Rack travel in mm : 4.20...4.40

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom Pressure hPa :

: 8.90...9.00 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : 300

Rack travel in m: 10.70...10.90

2nd pressure hPa : 500

Rack travel in m: 11.90...12.10 3rd pressure hPa : 1000 Rack travel in m: 12.30...12.40

START CLIT-OUT

Speed 1/min: 180 (200)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 Speed : 750 rpm

Del.quantity cm3/: 103.5...106.5 1000 s: (101.0...109.0)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 43.0...45.0 1000 s: (41.0...47.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.30

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 115.0...125.0

1000 s: (112.0...128.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

**B08** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB6,101 : 20.12.91 Test sheet Edition Replaces : 29.11.91 : ISO-4113 Test oil Combination no. : 0 403 446 274 Injection pump Pump designation : PES6MW100/720RS1131 EP type number : 0 413 406 123 Governor Governor design. : RQ300/1300MW105-3 Governer no. : 0 420 082 050 Customer-spec. information Customer : MB-NFZ Engine : OM 366 A 1st version kW : 121.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test Lines : 1 680 715 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1300 Rack travel in mm : 10.90...11.00 Del.quantity cm3/: 8.8...9.0 100 s: (8.6...9.2) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 300.0 Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1400 1st speed travel mm : 8.80...9.20 : 1300 2nd speed rpm : 7.50...7.70 travel mm : 500 3rd speed man : 4.90...5.50 travel nm : 300 4th speed rpm : 2.10...2.50 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: 108 Speed rpm : 1200 Rack travel in mm : 14.70...16.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 700 : 88.0...90.0 Del.quantity 1000 : (86.0...92.0) : 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.70...3.80 : (3.65...3.75)

1st version Control lever START CUT-OUT position degrees: 96...104 1/min: 200 (230) Speed Setting point: Speed LLOW. FUEL DELIVERY CHARACTERISTICS Rack travel in mm: 15.5 Testing: 1st version 1st rack travel in: 9.90 Aneroid pressure h: 700 Speed rpm: 750
Del.quantity cm3/: 86.0...89.0
1000 s: (83.5...91.5)
Spread cm3: 5.00 Speed rpm : 1345...1360 2nd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1500 rpm : 0.00...1.00Speed 1000 s: (7.0) Aneroid pressure h: -LOW IDLE 1 npm : 500 Speed Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0) Control lever position degrees: 72...80 Setting point w/out bumper spring rpm : 300 Rack travel in mm : 6.2 **BREAKAWAY** Testing: 1st version Speed rpm : 200 1mm rack travel less than Minimum rack trave: 8.00 rpm : 300 full load rack tr: 9.90 Speed Rack travel in am : 6.10...6.30 rpm : 1345...1360 Speed Rack travel in mm : 2.00 : 510...550 Speed rom STARTING FUEL DELIVERY TORQUE CONTROL Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0) Dimension a mm : 0.79 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.90...11.00 rpm : 750 2nd speed LOW IDLE Rack travel in m: 11.60...11.70 rpm : 1100 3rd speed Speed rpm : 300 Rack travel in mm : 6.10...6.30 Rack travel in m: 11.10...11.30 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50) Aneroid/Altitude Compensator Test 1st version Remarks: Setting Speed rpm : 500 Pressure hPa : 200 Rack travel mm : 10.20...10.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.80...9.90 2nd pressure hPa : 400 Rack travel in m: 10.80...11.10 3rd pressure hPa : 700 Rack travel in m: 11.60...11.70

Note remarks

: FIA8,101 : 20.12.91 Test sheet Edition : 29.11.91 Replaces Test oil : ISO-4113

: 0 403 446 284 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1197

: 0 413 406 185 EP type number

Governor

: RQV325...1250MW109-1 Governor design.

Governer no. : 0 420 083 995

Customer-spec, information Customer : IVECO-FIAT

: 8060.45.6090 Engine

: 167.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 014 Test Lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm: 14.50...14.60

Del.quantity cm3/: 10.5...10.7

100 s: (10.3...10.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm: 325.0 Rack travel in mm: 7.7...7.9 Del.quantity cm3/: 2.0...2.4

100 s: (1.7...2.6) cm3 : 0.3

Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

: 10.00...10.40 travel mm

rpm : 825 2nd speed

: 4.90...5.10 travel mm

3rd speed : 400 rpm

2.90...3.50 travel mm

4th speed rpm

1.50...1.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1250 Aneroid pressure h: 1200

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever : 1100 Speed rpm Del.quantity cm3/: 108.0...111.0 1000 s: (105.5...113.5) position degrees: 116...124 Testina: Spread cm3 : 5.001st rack travel in: 13.50 1000 s: (7.0) Speed rpm : 1310...1320 2nd rack travel in: 4.00 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 67.0...69.0 Speed rpm : 1445...1475 4th rack travel in: 1550 1000 s: (65.0...71.0) rpm : 0.00...1.00Speed LOW IDLE 1 **BREAKAWAY** Control Lever position degrees: 76...84 1st version Setting point w/out bumper spring 1mm rack travel less than Speed rpm : 325 Rack travel in mm : 7.8 full load rack tr: 13.50 rpm : 1310...1320 Speed Testing: Speed rpm : 200 STARTING FUEL DELIVERY Minimum rack trave: 9.50 : 325 Speed rpm Rack travel in mm : 7.70...7.90 Speed rpm : 100 Del.quantity cm3/: 40.0...60.0 1000 s: (37.0...63.0) TORQUE CONTROL Torque control curve - 1st version rpm : 1250 1st speed LOW IDLE Rack travel in m: 14.50...14.60 ad speed rpm : 1100 Rack travel in m: 14.20...14.40 2nd speed Speed rpm : 325 Rack travel in mm : 7.70...7.90 rpm : 900 3rd speed Del.quantity cm3/: 20.0...24.0 Rack travel in m: 13.60...13.80 1000 s: (17.5...26.5) npm : 709 4th speed Spread cm3 : 3.50Rack travel in m: 13.50...13.60 1000 s: (5.50) Aneroid/Altitude Remarks: Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -: 11.20...11.30 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : 450 Rack travel in m: 11.70...11.80 2nd pressure hPa : 700 Rack travel in m: 12.80...13.10 3rd pressure hPa : 1000 Rack travel in m: 13.50...13.60 FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1000

Note remarks

Test sheet : RVI 6,2 J 1 : 18.12.91 : 10.91 Edition

Replaces Test oil : ISO-4113

Combination no. : 0 403 446 291

Injection pump

Pump designation : PES6MW100/320RS1214

EP type number : 0 413 406 204

Governor

: RQV275...1250MW115-1 Governor design.

: 0 420 083 992 Governer no.

Customer—spec. information Customer : RVI

Engine : MIDR 060226 V

1st version kW : 129.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.20...4.30 : (4.15...4.35)

Rack travel in mm : 16.50...19.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 275.0 Rack travel in mm : 5.80...6.20

Del.quantity cm3/: 2.0...2.4

100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1330 1st speed

: 9.80...10.20 travel mm

rpm : 950 2nd speed

travel mm : 6.90...7.10 3rd speed : 550

rpm travel mm

: 3.60...4.20 : 275

4th speed rom

: 0.80...1.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1000

Del.quantity : 103.0...107.0)

cm3 : 3.50 Spread 1000 : (6.00)RATED SPEED 1st version Control lever position degrees: 298...306 Setting point: Speed : 1350 rom Rack travel in mm: 16.5 Testing: 1st rack travel in: 11.80 rpm : 1320...1340 Speed 2nd rack travel in: 4.00 rpm : 1460...150G Speed 4th rack travel in: 1600 Speed rpm: 0.00...1.00 LOW TOLE 1 Control lever position degrees: 238...246 Setting point w/out bumper spring rom Rack travel in mm: 7.1 Testina: Speed rom : 200 Minimum rack trave: 6.10 rpm : 275 Rack travel in mm : 5.50...5.90 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 12.80...12.90 nd speed rpm : 700 Rack travel in m: 11.90...12.00 2nd speed rpm : 1000 3rd speed Rack travel in m: 12.30...12.50 rpm : 500 4th speed Rack travel in m: 17.50...11.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 1250 rpm hPa : 1000 Pressure : 12.80...12.90 Rack travel mm Measurement 1/min: 1250 Speed 1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 140 Rack travel in m: 12.00...12.20 3rd pressure hPa : 180 Rack travel in m: 12.30...12.60 START CUT-CUT 1/min : 200 (220) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 700 Del.quantity cm3/: 98.5...101.5 1000 s: (90.0...104.0) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 1250 Del.quantity cm3/: 89.0...91.0 1000 s: (87.0...93.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1320...1340 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 88.0...112.0 1000 s: (85.0...115.0) Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 275
Rack travel in mm : 5.80...6.20
Del.quantity cm3/ : 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50 1000 s: (5.00) Remarks: Start-of-delivery blocking at start of delivery of cylinder no. 1.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6,1 B 9 : 18.12.91 Test sheet Edition : 11.91 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 295 Injection pump Pump designation : PES6MW100/720RS1131-EP type number : 0 413 406 165 Governor Governor design. : RQV300...1300MW67-5 : 0 420 083 262 Governer no. Customer-spec. information Customer : MB-NFZ Engine : OM 366 LA 1st version kW : 155.0 : 2600 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Cverflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasina : 0-60-120-180-249-300 Tolerance + - \* : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1300Rack travel in mm : 13.10...13.20 Del.quantity cm3/: 9.8...10.0 100 s: (9.6...10.2) Spread cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1350 : 8.40...8.80 travel mm 2nd speed rpm : 880 travel mm : 4.90...5.10 3rd speed rpm : 500 : 2.70...3.30 travel mm 4th speed rpm : 300 : 1.20...1.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1350 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 1000 : 98.0...100.0 Del.quantity 1000 : (96.0...102.0) : 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

BEGINNING OF DELIVERY Test pressure, bar: 30

Test pressure, bar: 30...32

Prestroke mm : 3.60...3.70 : (3.55...3.75)

1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 12.10 Speed rpm: 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1450...1480 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.2 Testing: Speed rpm : 200 Minimum rack trave: 7.50 rpm : 300 Speed Rack travel in mm : 6.10...6.30 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 Aneroid/Altitude Compensator Test 1st version Setting Speed MON : 500 hPa : Pressure Rack travel mm : 10.20...10.30 Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.20...11.30 2nd pressure hPa : 350 Rack travel in m: 12.10...12.40 3rd pressure hPa : 1000 Rack travel in m: 13.10...13.20 START CUT-OUT 1/min: 220 (250) Speed FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 85.0...88.0 1000 s: (82.5...90.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm: :500 Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.10 rpm: : 1340...1350 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Remarks:

Speed

1st version

Aneroid pressure h: 1000

rpm

: 600

#### Note remarks

: MWM 6,2 F : 18.12.91 Test sheet Edition Replaces : 08.91 Test oil : ISO-4113

Combination no. : 0 403 466 125

Injection pump

Pump designation : PES6MW100/320/3RS116

: 0 413 406 196 EP type number

Governor

Governor design: : RSV325...900\*\*W1A340 Governer no. : 0 420 085 144

Customer-spec, information Customer

Engine : TD 226 B-6

Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing . 0-60-120-180-240-300

Tolerance \* - \* ± 0.50 (0.75)

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 11.6...11.8

100 s: (11.4...12.0)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 325.0 2nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4) cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

: 116.5...118.5 Del.quantity 1000 : (114.5...120.5) cm3 : 3.50 1000 : (6.00)

Spread

RATED SPEED

1st version

Control Lever

position degrees: 98...106

Setting point:

rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.40

rpm : 940...950 Speed

2nd rack travel in: 4.00

rpm : 1000...1030 Speed 4th rack travel in: 1100 Speed rpm : 0.30...1.70

LOW IDLE 1 Control leven

position degrees: 76...84 Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 6.4

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

Speed rpm : 325 Rack travel in mm : 6.30...6.50

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.40 Speed rpm : 940...950

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (97.0...123.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 8.0...12.0

1000 s: (5.5...14.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 4,0 A 32 : 20.12.91 : 01.91 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 474 010 Injection pump Pump designation : PES4MW100/720RS1127 : 0 413 404 103 EP type number Governor Governor design. : RSV350...750MW0A336-: 0 420 085 164 Governer no. Customer-spec. information Customer : MB-NFZ : 0M364A Engine 1st version kW : 84.0 Rated speed : 1500 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.80...13.90 Del.guantity cm3/: 9.5...9.7

100 s: (9.3...9.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.3...7.9 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 95.0...97.0 1000 : (93.0...99.0)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 76...84

Setting point:

Speed rpm Rack travel in mm : 0.6

Testina: 1st rack travel in: 12.80

B19

rpm : 750...755 \* Speed

2nd rack travel in: 4.00

rpm : 780...793 Speed 4th rack travel in: 800

rom : 0.30...1.70 Speed

LOW IDLE 1 Control Lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rom : 350 Rack travel in mm : 7.6

Speed rpm : 350 Rack travel in mm : 7.30...7.90

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.80 Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...100.0 1000 s: (87.6....03.0)

## LOW IDLE

Speed rpm : 350 Rack travet in mm : 7.30...7.90 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5)

Spread cm3 : 3.501000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 30...38 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Observe VDT-I-420/120

Note remarks

: MB 4,0 J : 18.12.91 : 02.91 Test sheet Edition Replaces

Test oil : ISO-4113

Combination no. : 0 403 474 013

Injection pump

Pump designation : PES4MW100/720RS1127

EP type number : 0 413 404 103

Governor

Governor design. : RSV750...1250MW0A318

: 0 420 085 167 Governer no.

Customer-spec. information Customer : MB-NFZ

: OM 364 A Engine

1st version kW : 84.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

: 0-76-180-276 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1230 1st speed

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 750.0Rack travel in mm : 6.3...6.9 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : 2.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1230 Speed

: 84.0...86.0 Del.quantity 1000 : (82.0...88.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 88...96

Setting point:

rpm : 800 Speed Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.40

Speed rpm : 1270...1275 \* 2nd rack travel in: 4.00 Speed rpm : 1295...1310 4th rack travel in: 1450

rpm : 0.30...1.70Speed

LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm : 750

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 : 750 rpm Rack travel in mm : 6.30...6.90 Rack travel in mm : 2.00 Speed וווסרו : 750...810

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

Rack travel in mm: 6.6

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 750 Speed rpm : 750
Del.quantity cm3/: 73.0...76.0
1000 s: (70.5...78.5)
Spread cm3 : 5.00

1000 s: (7.0)

RACK STOP ADJUSTMENT

Speed : 100 rom

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40 Speed rpm : 1270...1275

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 750 Rack travel in mm : 6.30...6.90 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

\* Read off speed set under 1. Add 25...35 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Note remarks

Test sheet : LIE5,681 : 22.11.91

Replaces : -

Test oil : ISO-4113

Combination no. : 0 403 474 021

Injection pump

Pump designation : PES4MW100/720RS1181

EP type number : 0 413 404 107

Governor

Governor design. : RSV400...1000MW1A348

Governer no. : 0 420 035 133

Customer-spec. information Customer : LIEBHERR

Engine : D914T

1st version kW : 100.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 049

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY
Test pressure, bar: 30...32

Prestroke mm : 3.00...3.10

: (2.95...3.15) Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 10.70...10.90

Del.quantity cm3/: 13.0...13.2

100 s: (12.8...13.4)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.0...6.0 Del.quantity cm3/ : 2.0...2.4 100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1000 Aneroid pressure h: 655

Del.quantity : 130.0...132.0

1000 : (128.0...134.0)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 100...108

Setting point:

Speed rpm : 800 Rack travel in mm : 0.6

Testina: 1st rack travel in: 9.70 rpm : 1020...1030 Speed 2nd rack travel in: 4.00 rpm : 1060...1075 Speed 3rd rack travel in: 4.00 rpm : 1070...1085 Speed 4th rack travel in: 1200 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 72...80 Setting point w/out bumper spring rpm : 400 Rack travel in mm : 5.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.00...5.50 Rack travel in mm : 2.00 Speed : 450...510 POM TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 10.70...10.90 2nd speed rpm : 500 Rack travel in m: 10.70...10.90 5th speed rpm : 450 Rack travel in m. 11.90...12.10 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -Rack travel mm : 10.00...10.20 Measurement 1/min: 500 Speed 1st pressure hPa : 530 Rack travel in m: 10.40...10.50 2nd pressure hPa : 655 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 655 Speed rpm : 500 Del.quantity cm3/: 126.5...129.5 1000 s: (124.0...132.0)

Spread cm3 : 3.50 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 109.0...111.0 1000 s: (107.0...113.0)

## **BREAKAWAY**

1st version 1mm rack travel less than full load rack tr: 9.70 Speed rpm : 1020...1030

# STARTING FUEL DELIVERY

# LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.00...6.00
Del.quantity cm3/: 20.0...24.0
1000 s: (17.5...26.5)
Spread cm3 : 3.50
1000 s: (5.00)

#### Remarks:

۰

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB6,1B11 : 20.12.91 Test sheet Eqition | Replaces Test oil : ISO-4113 Combination no. : 0 403 476 110 Injection pump Pump designation : PES6MW100/720RS1131-EP type number : 0 413 406 165 Governor Governor design. : RSV350...1300Mw0A329 : 0 420 035 181 Governer no. Customer-spec. information Customer : M3-NF7 Engine : 0M366LA 1st version kW : 170.0 Rated sneed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 **Opening** : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600

(A) Injection pump setting values

Set equal delivery quant.

per values \_\_\_\_

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

Insp. values in parentheses

: 3.60...3.70 : (3.55...3.75) Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1280 Rack travel in mm : 14.40...14.50 Del.quantity cm3/: 11.4...11.6 100 s: (11.2...11.8) Spread cm3 : 0.3 100 s: (0.6) rpm : 350.0 2nd speed Rack travel in mm : 6.1...6.3 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1280 Aneroid pressure h: 1000 Del.quantity : 114.0...116.0 1000 : (112.0...118.0) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 91...99 Setting point: rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 13.40

rpm : 1330...1335 \* Speed 2nd rack travel in: 4.00 rpm : 1410...1423 Speed 4th rack travel in: 1550

Speed rom : 0.30...1.79

LOW IDLE 1 Control lever

position degrees: 75...83 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 6.2

Testing:

Speed : 100 COM Minimum rack trave: 19.00 rpm : 350

Rack travel in mm : 6.10...6.30

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed COM Pressure hPa : -

: 10.70...10.80 Rack travel mm

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : 350 Rack travel in m: 11.90...12.10 2nd pressure hPa : 500 Rack travel in m: 13.10...13.30

3rd pressure hPa : 1000

Rack travel in m: 14.40...14.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 750 Del.quantity cm3/: 106.5...109.5 1000 s: (104.0...112.0)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 41.0...43.0 1000 s: (39.0...45.0)

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0

1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

Test hydr. locking device for starting with 500...1000 hPa air pressare.

\* Read off speed set under 1. Add 80...88 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : IHC 7,7 C : 18.12.91 : 11.91 Test sheet Edition Replaces : ISO-4113 Test oil : 0 403 476 111 Combination no. Injection pump Pump designation: PES6MW100/320RS1198-: 0 413 406 211 EP type number Governor Governor design. : RSV350...1250M/ZA347 : 0 420 085 182 Governer no. Customer-spec. information : NAVISTAR Customer : DT-466 Engine : 156.0 1st version kW : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 038 Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Openina . pressure, bar : 207...210 Orifice plate diameter mm : 0,6 Test lines : 1 680 750 008 Outside diameter

x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_ BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.25...3.35 : (3.20...3.40) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1250 1st speed Rack travel in mm : 11.60...11.70 Del.quantity cm3/: 12.3...12.5 100 s: (12.1...12.7) Spread cm3 : 0.3100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/: 1.5...1.9 100 s: (1.3...2.2) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 2.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1250 Speed Aneroid pressure h: 900 : 123.0...125.0 Del.quantity 1000 : (121.0...127.0) : 3.50 Spread cm3 1000 : (6.00)RATED SPEED 1st version Control lever position degrees: 100...108

Setting point:

: 800

rpm

Speed

Rack travel in mm: 0.6 Testing: 1st rack travel in: 10.60 Speed rpm : 1290...1300 2nd rack travel in: 4.00 Speed : 1350...1360 rpm 3rd rack travel in: 4.00 rpm : 1340...1370 Speed 4th rack travel in: 1500 Speed rcm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring : 350 rpa Rack travel in mm : 5.2 Testing: Speed : 100 rpm Minimum rack trave: 19.00 : 350 Speed rpm Rack travel in mm : 5.10...5.30 Aneroid/Altitude Compensator Test 1st version Setting Speed man : 500 hPa : -Pressure Rack travel mm : 9.30...9.40 Measurement 1/min : 500 Speed 1st pressure hPa : 265 Rack travel in m: 10.00...10.10 2nd pressure hPa : 455 Rack travel in m: 10.50...10.90 3rd pressure hPa : 900 Rack travel in n: 11.60...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 79.5...83.5 1000 s: (77.5...85.5) **BREAKAWAY** 1st version 1mm rack travel less than

Speed rpm : 1290...1300 STARTING FUEL DELIVERY : 100 Speed MCL Del.quantity cm3/: 160.0...180.0 1000 s: (155.0...185.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 15.5...19.5 1000 s: (13.0...22.0) cm3 : 3.50 Spread 1000 s: (5.00) Remarks: : IHC #1818555C91

full load rack tr: 10.60

Note inst. in remarks column

: FOR 2.5 L Test scheet : 23.12.91 Edition

replaces

Calibrating oil : ISO-4113

: VE4/11F2100R415 Injection pump Type number : 0 460 414 083

Customer Part-No. :

Customer-specific information

Customer : FORD

Engine : 2.5L DI MY 92

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil °C

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 114 assembly

Openina

Pressure bar: 207.00...210.00

Perforated-plate

diameter mm: 0.4

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery block Piston stroke mm: 0.35

mm: 0.30...0.40

Outlet. : B

Injection pump setting values Test specifications in parentheses

Timing device travel

1/min: 1250 Speed

Setting value mm: 4.20...4.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 500 Speed

Setting value bar: 4.40...5.00

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1000

Del. quantity cm3/

1000s.: 32.20...33.20

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (4.0)

Low-idle speed regulation

Speed 1/min: 425

Del. quantity cm3/

10005.: 6.00...8.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0)

Full-load speed regulation

1/min: 2100

Del. quantity cm3/

1000s.: 30.50...36.50

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 50.00...90.00

1000s.: 50.00 mind

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000
TD travel mm: 7.50...8.30
mm: (7.20...8.60)
electromagnet Volt: 12
2nd speed 1/min: 1250
TD travel mm: 4.20 / 40

TD travel mm: 4.20...4.60

mm: (3.90...4.90)

Shutoff

electromagnet Volt: 12

3rd speed 1/min: 800	† Shutoff
TD travel mm: 2.00	2.80 + electromagnet Volt: 12 .3.10) + Del. quantity cm3/: 0.005.00
Shutoff	10008:: (0.005.00)
electromagnet Volt: 12	+ 3rd speed 1/min: 2200
4th speed 1/min: 500	+ Shutoff
TD travel mm: 2.80	
m: (2.50	
Shutoff	10005.: (19.2029.20)
electromagnet Volt: 12	+ 4th speed 1/min: 2100
Supply-pump pressure charac	+ Shutoff
Supply policy pressure charac	teristic: + electromagnet Volt: 12 + Del. quantity cm3/: 30.5036.50
1st speed 1/min: 500	1000s.: (27.5039.50)
Supply-pump	5th speed 1/min: 1700
pressure bar: 4.40	5.00 + Shutoff
bar: (4.20	.5.20) + electromagnet Volt: 12
Shutoff	+ Del. quantity cm3/: 36.5038.90
electromagnet Volt: 12	10008.: (35.2040.30)
2nd speed 1/min: 1000	+ 6th speed 1/min: 1000
Supply-pump	+ Shutoff
pressure bar: 5.70 bar: (5.50	6.30 + electromagnet Volt: 12
Shutoff par: (5.50	
electromagnet Volt: 12	1000S.: (30.2035.20) 7th speed 1/min: 500
3rd speed 1/min: 1250	+ Shutoff
Supply-pump	electromagnet Volt: 12
pressure bar: 6.20	6.30   Del. quartity cm3/: 24.0028.00
bar: (6.00	
Shutoff	+
electromagnet Volt: 12	+ Mech. shutoff:
4th speed 1/min: 2000	<del>-</del>
Supply-pump	Electr. shutoff:
pressure bar: 7.80	8.40
pressure bar: 7.80 bar: (7.60	8.40 .8.60)
pressure bar: 7.80 bar: (7.60 Shutoff	8.40 .8.60)
pressure bar: 7.80 bar: (7.60	8.40 .8.60)
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12	8.40 .8.60)
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12 (verlow quantity at overfice)	8.40 .8.60)  1st speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice) 1st speed 1/min: 500	8.40 .8.60)
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice) 1st speed 1/min: 500 Shutoff	8.40 .8.60)  1st speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery:
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice) 1st speed 1/min: 500 Shutoff electromagnet Volt: 12	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00  1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00	8.40 .8.60)  1st speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 425 Shutoff
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00 quantity cm3/10s: (97.00	8.40 .8.60)  1st speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff .141.00
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00 quantity cm3/10s: (97.00 2nd speed 1/min: 1950	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00  1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff .141.00
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00. quantity cm3/10s: (97.00. 2nd speed 1/min: 1950 Shutoff	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00  1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff .141.00)  1st speed 1/min: 425  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 6.008.00  1000s.: (3.0011.00)
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00 quantity cm3/10s: (97.00 2nd speed 1/min: 1950	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00  1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff .141.00)  1st speed 1/min: 425  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 6.008.00  1000s.: (3.0011.00)  Dispersion cm3/: 3.0
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00. quantity cm3/10s: (97.00. 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00  1000S.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff .141.00)  1st speed 1/min: 425  Shutoff electromagnet Volt: 12 Del. quantity cm3/: 6.008.00  1000S.: (3.0011.00)  Dispersion cm3/: 3.0  1000S.: (4.0)
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 97.00. 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Overflow : 115.00. quantity cm3/10s: (115.00.)	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00  1000S.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 6.008.00  1000S.: (3.0011.00)  Dispersion cm3/: 3.0  1000S.: (4.0)  2nd speed 1/min: 500  Shutoff
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00. 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Overflow : 115.00.	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 6.008.00 1000s.: (3.0011.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 97.00. 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Overflow : 115.00. quantity cm3/10s: (115.00.)	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00  1000S.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 6.008.00  1000S.: (3.0011.00)  Dispersion cm3/: 3.0  1000S.: (4.0)  2nd speed 1/min: 500  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 2.0010.00
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overflow 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 97.00 quantity cm3/10s: (97.00 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Overflow : 115.00 quantity cm3/10s: (115.00 Delivery-quant. and breakaw	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 6.008.00 1000s.: (3.0011.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overflow 1st speed 1/min: 500 Shutoff electromagnet Volt: 12 Overflow : 97.00. 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Overflow : 115.00 Overflow : 115.00 Delivery-quant. and breakaw  1nd speed 1/min: 1950	8.40 .8.60)  1st speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000s.: (0.093.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 6.008.00 1000s.: (3.0011.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00 1000s.: (0.0010.00)
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00. 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Overflow : 115.00. Quantity cm3/10s: (115.00) Delivery—quant. and breakaw  1nd speed 1/min: 1950 Shutoff  Ind speed 1/min: 1950 Shutoff	8.40 .8.60)  1st speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 6.008.00 1000s.: (3.0011.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00 1000s.: (0.0010.00) Part-load del.at 3rd injqty.
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00. 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Overflow : 115.00. quantity cm3/10s: (115.00  Delivery-quant. and breakaw  1nd speed 1/min: 1950 Shutoff electromagnet Volt: 12  Overflow : 115.00  Delivery-quant. and breakaw	8.40 .8.60)  1st speed 1/min: 425 Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 6.008.00 1000S.: (3.0011.00) Dispersion cm3/: 3.0 1000S.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00 Fart-load del.at 3rd injqty. terza fermo della portata
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Overflow : 97.00. 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Overflow : 115.00. Quantity cm3/10s: (115.00) Delivery—quant. and breakaw  1nd speed 1/min: 1950 Shutoff  Ind speed 1/min: 1950 Shutoff	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00  1000S.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 6.008.00  1000S.: (3.0011.00)  Dispersion cm3/: 3.0  1000S.: (4.0)  2nd speed 1/min: 500  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 2.0010.00  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 2.0010.00  Part-load del.at 3rd injqty. terza fermo della portata stop (EGR set) .39.70)
pressure bar: 7.80 bar: (7.60 Shutoff electromagnet Volt: 12  (verlow quantity at overfice)  1st speed 1/min: 500 Shutoff electromagnet Volt: 12  Cverflow : 97.00. 2nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Overflow : 115.00. quantity cm3/10s: (115.00) Delivery—quant. and breakaw  1nd speed 1/min: 1950 Shutoff electromagnet Volt: 12 Deli quantity cm3/: 36.00	8.40 .8.60)  1st speed 1/min: 425  Del. quantity cm3/: 0.003.00  1000S.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 6.008.00  1000S.: (3.0011.00)  Dispersion cm3/: 3.0  1000S.: (4.0)  2nd speed 1/min: 500  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 2.0010.00  Shutoff electromagnet Volt: 12  Del. quantity cm3/: 2.0010.00  Part-Load del.at 3rd injqty. terza fermo della portata  stop (EGR set)

Spacing mm: 20.0 1st speed 1/min: 1250 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 17.00...20.00
1000s.: (16.00...21.00) Automatic starting fuel delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...65.00 1000s.: (35.00...65.00) 1/min: 480 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 21.00...31.00 1000s.: (21.00...31.00) 3rd speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 50.00...90.00 1000s.: (50.00...90.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 2.7...2.9 KF mm: KOT mm: 1.8 MS XK mm: -ΧĽ mm: -Remarks: Overflow restriction 0.75 mm - Part No. ..343,..344

Note inst. in remarks column

Test scheet : FOR 2.5 L1 Edition : 23.12.91

replaces

Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R415-1 : 0 460 414 085 Type number

Customer Part-No. :

Customer-specific information

Customer : FORD

: 2.5L DI MY 92 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 114 assembly

Opening |

bar: 207.00...210.00 Pressure

Perforated-plate

mm: 0.4 diameter

Test inj. tubing : 1 680 750 073

Outside diameter : 6.CO x Wall thickness : 2.00 x Length mm: 450

Start of delivery block mm: 0.35 Piston stroke

mm: 0.30...0.40

Outlet : B

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 4.20...4.60

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 500 Speed

Setting value bar: 4.40...5.00

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1000 Speed

Del. quantity cm3/

1000s.: 32.20...33.20

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0

1000s.: (4.0)

Low-idle speed regulation

1/min: 425 Speed

Del. quantity cm3/ 1000s.: 8.00...10.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (4.0)

Full-load speed regulation

1/min: 2100

Del. quantity cm3/

1000s.: 30.50...36.50

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 50.00...90.00 mind 1000s.: 50.00

mind

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1st speed 1/min: 2000

TD travel mm: 7.50...8.30 mm: (7.20...8.60) electromagnet Volt: 12 2nd speed 1/min: 1250

TD travel

mm: 4.20...4.60

mm: (3.90...4.90)

Shutoff

electromagnet Volt: 12

3rd speed 1/min: TD travel mm:	2.002.80	+ Shutoff + electromagnet Volt: 12
Shutoff	(1.703.10)	Del. quantity cm3/: 0.005.00 1000\$:: (0.005.00)
electromagnet Volt:		3rd speed 1/min: 2200
4th speed 1/min:	500 -	† Shutoff
TD travel nm:	2.803.00	+ electromagnet Volt: 12
	(2.503.30)	+ Del. quantity_cm3/: 23.2025.20
Shutoff	-	† 1000s.: (19.2029.20)
electromagnet Volt:	12 -	+ 4th speed 1/min: 2100
	-	+ Shutoff
Supply-pump pressur	e characteristic: -	+ electromagnet Volt: 12
	_	+ Del. quantity cm3/: 30.5036.50
1st speed 1/min:	500 -	+ 1000s.: (27.5039.50)
Supply-pump	-	+ 5th speed 1/min: 1700
	4.405.00	+ Shutoff
	(4.205.20)	electromagnet Volt: 12
Shutoff	-	+ Dei. quantity cm3/: 36.5038.90
electromagnet Volt:	12	1000s.: (35.2040.30)
2nd speed 1/min:		+ 6th speed 1/min: 1000
Supply-pump	1000	+ Shutoff
pressure bar:	5 70 6 30	electromagnet Volt: 12
	(5.506.50)	bel. quantity cm3/: 32.2033.20
Shutoff Shutoff	(5.57	1000s.: (30.2035.20)
electromagnet Volt:	12	7th speed 1/min: 500
3rd speed 1/min:		+ Shutoff
Supply-pump	1250	
pressure bar:	6.206.80	+ electromagnet Volt: 12
	(6.007.00)	+ Del. quantity cm3/: 24.0028.00 + 1000s.: (23.2029.00)
Shutoff	(0.00/.00)	T 10005.: (25.2029.00)
	12	T Mach chutaffe
electromagnet Volt: 4th speed 1/min:	2000	+ Mech. shutoff:
Supply-pump	2000	T Floors shirteff.
pressure bar:	7.808.40	+ Electr shutoff:
Diggsuie nati	7,00,,,0.40	
		1 1ct cross 1/min: /25
bar:	(7.608.60)	1st speed 1/min: 425
bar:	(7.608.60)	+ Del. quantity cm3/: 0.003.00
bar:	(7.608.60)	+ Del. quantity cm3/: 0.003.00 + 1000S.: (0.003.00)
bar: Shutoff electromagnet Volt:	(7.608.60)	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Shutoff
bar:	(7.608.60)	+ Del. quantity cm3/: 0.003.00 + 1000S.: (0.003.00)
bar: Shutoff electromagnet Volt: Overlow quantity at	(7.608.60)  12  overflow valve:	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min:	(7.608.60)  12  overflow valve:	Del. quantity cm3/: 0.003.00 1000S:: (0.003.00) Shutoff
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff	(7.608.60)  12  overflow valve:  500	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery:
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt:	(7.608.60)  12  overflow valve:  500  12	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: - Idle delivery: 1st speed 1/min: 425
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow:	(7.608.60)  12  overflow valve:  500  12  97.00141.00	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s:	(7.608.60)  12  overflow valve:  500  12  97.00141.00 (97.00141.00)	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min:	(7.608.60)  12  overflow valve:  500  12  97.00141.00 (97.00141.00)	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff clectromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff	(7.608.60)  12  overflow valve:  500  12  97.00141.00  (97.00141.00)  1950	Del. quantity cm3/: 0.003.00 1000S.: (0.003.00) Shutoff clectromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000S.: (5.0013.00)
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt:	(7.608.60)  12  overflow valve:  500  12  97.00141.00  (97.00141.00)  1950  12	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00) Dispersion cm3/: 3.0
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow	(7.608.60)  12  overflow valve:  500  12  97.00141.00  (97.00141.00)  1950  12  115.00184.00	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00) Dispersion cm3/: 3.0 1000s.: (4.0)
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow : quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt:	(7.608.60)  12  overflow valve:  500  12  97.00141.00  (97.00141.00)  1950  12  115.00184.00	Del. quantity cm3/: 0.003.00
bar: Shutoff electromagnet Volt: Overlow quantity at  1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s:	(7.608.60)  12  overflow valve:  500  12  97.00141.00 (97.00141.00) 1950  12  115.00184.00 (115.00184.00)	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff
bar: Shutoff electromagnet Volt: Overlow quantity at 1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow	(7.608.60)  12  overflow valve:  500  12  97.00141.00 (97.00141.00) 1950  12  115.00184.00 (115.00184.00)	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12
bar: Shutoff electromagnet Volt: Overlow quantity at  1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s:	(7.608.60)  12  overflow valve:  500  12  97.00141.00 (97.00141.00) 1950  12  115.00184.00 (115.00184.00)	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00
bar: Shutoff electromagnet Volt: Overlow quantity at  1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: Delivery—quant. and	(7.608.60)  12  overflow valve:  500  12  97.00141.00  (97.00141.00)  1950  12  115.00184.00  (115.00184.00)  breakaway char.:	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12
Shutoff electromagnet Volt:  Overlow quantity at  1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: Delivery—quant. and  1nd speed 1/min:	(7.608.60)  12  overflow valve:  500  12  97.00141.00  (97.00141.00)  1950  12  115.00184.00  (115.00184.00)  breakaway char.:	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00 1000s.: (0.0010.00)
Shutoff electromagnet Volt:  Overlow quantity at  1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: Delivery-quant. and  1nd speed 1/min: Shutoff	(7.608.60)  12  overflow valve:  500  12  97.00141.00  (97.00141.00)  1950  12  115.00184.00  (115.00184.00)  breakaway char.:  1950	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00 1000s.: (0.0010.00) Part-load del.at 3rd injqty.
Shutoff electromagnet Volt:  Overlow quantity at  1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: Delivery-quant. and  1nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: Delivery-quant. and	(7.608.60)  12 overflow valve:  500  12 97.00141.00 (97.00141.00) 1950  12 115.00184.00 (115.00184.00) breakaway char.:  1950  12	Del. quantity cm3/: 0.003.00 1000s.: (0.003.00) Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00) Dispersion cm3/: 3.0 1000s.: (4.0) 2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00 1000s.: (0.0010.00)  Part-load del.at 3rd injqty. terza fermo della portata
Shutoff electromagnet Volt:  Overlow quantity at  1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: Delivery-quant. and  1nd speed 1/min: Shutoff electromagnet Volt: Delivery-quant. and	(7.608.60)  12 overflow valve:  500  12 97.00141.00 (97.00141.00) 1950  12 115.00184.00 (115.00184.00) breakaway char.:  1950  12 36.0038.40	Del. quantity cm3/: 0.003.00  1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00)  Dispersion cm3/: 3.0 1000s.: (4.0)  2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00 1000s.: (0.0010.00)  Part-load del.at 3rd injqty. terza fermo della portata stop (EGR set)
Shutoff electromagnet Volt:  Overlow quantity at  1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: Delivery—quant. and  1nd speed 1/min: Shutoff electromagnet Volt: Delivery—quant. and  1nd speed 1/min: Shutoff electromagnet Volt: Del. quantity cm3/: 1000s.:	(7.608.60)  12  overflow valve:  500  12  97.00141.00 (97.00141.00) 1950  12  115.00184.00 (115.00184.00)  breakaway char.:  1950  12  36.0038.40 (34.7039.70)	Del. quantity cm3/: 0.003.00  1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00)  Dispersion cm3/: 3.0 1000s.: (4.0)  2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00 1000s.: (0.0010.00)  Part-load del.at 3rd injqty. terza fermo della portata stop (EGR set) scarico) (ARF)
Shutoff electromagnet Volt:  Overlow quantity at  1st speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: 2nd speed 1/min: Shutoff electromagnet Volt: Overflow quantity cm3/10s: Delivery-quant. and  1nd speed 1/min: Shutoff electromagnet Volt: Delivery-quant. and	(7.608.60)  12  overflow valve:  500  12  97.00141.00 (97.00141.00) 1950  12  115.00184.00 (115.00184.00)  breakaway char.:  1950  12  36.0038.40 (34.7039.70)	Del. quantity cm3/: 0.003.00  1000s.: (0.003.00)  Shutoff electromagnet volt: -  Idle delivery:  1st speed 1/min: 425 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.0010.00 1000s.: (5.0013.00)  Dispersion cm3/: 3.0 1000s.: (4.0)  2nd speed 1/min: 500 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.0010.00 1000s.: (0.0010.00)  Part-load del.at 3rd injqty. terza fermo della portata stop (EGR set)

Spacing mm: 20.0 1st speed 1/min: 1250 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 17.00...20.00 1000S.: (16.00...21.00) Automatic starting fuel delivery: 1st speed 1/min: 300 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...65.00 1000S.: (35.00...65.00) 2nd speed 1/min: 480 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 21.00...31.00 1000S.: (21.00...31.00) 3rd speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 50.00...90.00 1000S.: (50.00...90.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 2.7...2.9 K KF mm: KOT MS mm: 1.8 XK mm: -XL mm: -Remarks: Overflow restriction 0.75 mm - Part No. ..343,..344

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : CDC 3,9 P60 Edition : 15.01.92 replaces Calibrating oil : ISO-4113 : VE4/12F1250R424 Injection pump : 0 460 424 079 Type number Customer Part-No. : Customer-specific information Customer Engine : 4 BTAA 3.9 KW: 79 Power 1/min: 2500 Speed TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating oil return temp. with thermometer : 40.00...48.00 Electronically : 42.00...50.00 Inlet press., bar : 0.30...0.40 Calibrating nozzle-holder : 1 688 901 109 assembly Opening | bar: 207.00...210.00 Pressure Perforated plate mm: 0.5 diameter Test inj. tubing : 1 680 750 017 Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840 Start of delivery Prestroke mm: -(from BDC): -Start of delivery block Piston stroke mm: 1.2 mm: 0.02(0.06) Outlet : A Injection pump setting values

Test specifications in parentheses Timing-device travel 1/min: 850 Speed Charge press. hPa: 1000 Setting value mm: 1.00...1.40 AFB/AFB valve Volt: -Shutoff electromagnet Volt: 12 Supply-pump pressure 1/min: 1100 Speed Charge press hPa: 1000 Setting value bar: 6.90...7.50 Shutoff electromagnet Volt: 12 Full-load del. with charge press.: Speed 1/min: 850 Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 85.50...86.50 Shutoff electromagnet Volt: 12 cm3/: 5.0 Dispersion 1000s.: (5.0) Full-load del. w/out charge press.: Speed 1/min: 500 Del. quantity cm3/ 1000s.: 53.50...54.50 Shutoff electromagnet Volt: 12 Dispersion cm3/: 5.0 1000s.: (6.0) Low-idle speed regulation Speed 1/min: 400 Del. quantity cm3/ 1000s.: 21.00...25.00 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000s.: (7.0) Full-load speed regulation Speed 1/min: 1335 Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 74.00...80.00 Shutoff electromagnet Volt: 12

Chamb.		•		
Start:		1	Overlow quantity at	overflow valve:
Speed 1/min: Del. quantity cm3/:		+	1st speed 1/min:	
mind 1000s.: Shutoff	115.0	+	Shutoff	12
electromagnet Volt:	12	Ŧ	electromagnet Volt: Overflow :	41.7083.46
Inspection-pump test	t specifications	1	quantity cm3/10s: 2nd speed 1/min:	
Test specifications	in parentheses	<u>†</u>	Charge press. hPa: Shutoff	
Timing device charac	cteristic:	1	electromagnet Volt:	12 55.60139.00
2nd speed 1/min:		+	quantity cm3/10s:	
Charge press hPa: TD travel mm:	2.102.90	<b>†</b>	Delivery-quant. and	brooksysy chan
Shutoff	(1.803.20)	Ŧ	becivery qualit. and	Dieakaway Char
electromagnet Volt:	12	Ī	1nd speed 1/min:	700
3rd speed 1/min:	850	+	Charge air pressure	-setting
Charge press hPa:	1000	+	point hPa:	300
	1.001.40 (0.501.90)	+	Shutoff	43
Shutoff	(0.501.90)	Ī	electromagnet Volt: Del. quantity cm3/:	60 00 70 00
electromagnet Volt:	12	I	1000s.:	(65.5073.50)
8th speed 1/min:		+	2nd speed 1/min:	
Charge press. hPa:		+	Charge press. hPa:	1000
TD travel mm:	2.963.00	+	Shutoff	
	(1.803.20)	+	electromagnet Volt:	12
KSB/AFB valve Volt:	12	İ	Del. quantity cm3/: 1000s.:	0.003.00
Shutoff	12	I	3rd speed 1/min:	
electromagnet Volt:	12	+	Charge press. hPa:	
-		+	Shutoff	
Supply-pump pressure	e characteristic:	1	electromagnet Volt: Del. quantity cm3/:	12 15.0045.00
1st speed 1/min:	850	1	1000s.:	-
Charge press. hPa:	1000	+	5th speed 1/min:	1335
Supply-pump	F F0 / 40	+	Charge press. hPa:	1000
pressure bar: Shutoff	5.506.10	Ť	Shutoff	12
electromagnet Volt:	12	I	electromagnet Volt: Del. quantity cm3/:	
2nd speed 1/min:		+	1000s.:	(71.0083.00)
Charge press. hPa:	1000	+	9th speed 1/min:	1250
Supply-pump	/ 00 7 FD	†	Charge press. hPa:	1000
pressure bar: Shutoff	6.907.50	Ť	Shutoff	10
electromagnet Volt:	12	I	electromagnet Volt: Del. quantity cm3/:	81 00 86 00
3rd speed 1/min:	1250	+	10005.:	(79.5087.50)
Charge press. hPa:		+	10th speed 1/min:	1100
Supply-pump	7 50 0 40	+	Charge press. hPa:	1000
Shutoff	7.508.10	‡	Shutoff electromagnet Volt:	
electromagnet Volt:	12	+	Del. quantity cm3/:	84.0089.00
4th speed 1/min: Charge press. hPa:		1	12th speed 1/min	(82.5090.50)
Supply-pump	1000	I	12th speed 1/min: Charge press. hPa:	
pressure bar:	4.004.60	+	Shutoff	, 500
Shutoff		+	electromagnet Volt:	12
electromagnet Volt:	12	+	_	

Del. quyntity cm3/: 85.50...86.50 1000s.: (83.00...89.00) 1/min: 500 18th speed Charge press. hPa: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 53.50...54.50 1000s.: (50.00...58.00) Mech. shutoff: Mech. Abstellung: 1/min: 1250 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 12 Electr. shutoff: 1st speed 1/min: 400 Del. quantity cm3/: 0.00...3.00 1000s.: (0.60...3.06) Shutoff electromagnet volt: -Idle delivery: 1/min: 400 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 21.00...25.00 1000s.: (18.00...28.00) cm3/: 5.5 Dispersion 1000s.: (7.0) 2nd speed 1/min: 490 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: -Automatic starting fuel delivery: 1/min: 130 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 140.00...190.00 1000s.: -2nd speed 1/min: 240 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...70.00 1000s.: -4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 115.00...165.00 1000s.: -

Shutoff electromagnet:

Cut-in

min voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3.5...3.9
KF mm: K-Oï
MS mm: 0.8...1.2
SVS max. mm: LDA stroke mm: 7.0

Remarks:

: C.D.C. # 391 3443 Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Note remarks

Test sheet : KHD 3,0 e
Edition : 18.12.91
Replaces : 13.10.88
Test oil : ISO-4113

Combination no. : 0 400 464 134

Injection pump

Pump designation : PES4A80D410/3RS1356

EP type number : 0 410 484 022

Governor

Governor design. : RSV325...1150A8C494-

3!\_

Governer no. : 0 420 232 514

Customer—spec. information Customer : KHD

Engine : F3L912

1st version kW : 31.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 581 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00

: (1.85...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-2

Phasing : (1-90-270

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 9.60...9.70

Del.quantity cm3/ : 5.4...5.5

100 s: (5.3...5.7)

Spread cm3: 0.2

100 s: (0.4)

2nd speed rpm : 325.0 Rack travel in mm : 6.9...7.1 Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...1.9)

Spread cm3 : 0.2 100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 900

Del.quantity : 54.5...55.5 1000 : (53.0...57.0)

Spread cm3 : 2.50

1000 : (4.00)

RATED SPEED

1st version Control lever

position degrees: 92...100

Testing:

1st rack travel in: 8.60 Speed rpm : 940...950

2nd rack travel in: 4.00

rpm : 975...1005 Speed 3rd rack travel in: 4.00 rpm : 995...1025 Speed 4th rack travel in: 1155 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 68...76 Setting point w/out bumper spring rpm : 325 Rack travel in min: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm : 6.90...7.10 Rack travel in mm: 2.00 Speed : 425...485 rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 9.60...9.70 2nd speed rpm : 500 Rack travel in m: 9.60...9.80 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.60 rpm : 940...950 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) Rack travel in mm : 16.40...16.80 Remarks: **APPLICATION** 

Compressor

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet Phasing : DAF 8,3 t : 0-60-120-180-240-300 Edition : 22.01.92 Replaces Tolerance + - \* : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 400 646 273 BEGINNING OF DELIVERY DIFFERENCE Injection pump Pump designation : PE6A95D41ORS2525 betw. rack trav. m: 8.50...9.50 EP type number : 0 410 696 987 & maximum rack tra: 21.00 Governor Difference ° CS : 3.00...4.00 Governor design. : RQ225/1200AB1007-1L : 0 420 200 093 Governer no. EASIC SETTING Customer-spec. information 1st speed rpm: 1000 Customer : DAF Rack travel in mm : 12.60...12.70 Engine : DHTD 825 Del.quantity cm3/: 10.9...11.0 : 150.0 1st version kW Rated speed : 2400 100 s: (10.7...11.2) TEST BENCH REQUIREMENTS Spread cm3 : 0.3Test oil 100 s: (0.6) inlet temp. °C : 38...42 rpm : 225.0 2nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 0.7...1.2 Overflow valve : 1 419 992 198 100 s: (0.4...1.4) Inlet press., bar: 1.50 Spread cm3 : 0.3100 s: (0.5) Test nozzle holder : 0 681 343 009 assembly GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 650 pressure, bar : 172...175 Speed Rack travel in mm : 16.80...18.40 Test lines : 1 680 750 015 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter 1st version x Wall thickness Speed rpm : 1000 Aneroid pressure h: 700 x Length mm : 6.00x1.50x600 : 109.0...110.0 Del.quantity 1000 : (107.0...112.0) (A) Injection pump setting values Insp. values in parentheses cm3 : 3.50 Spread Set equal delivery quant. 1000 : (6.00)per values RATED SPEED

1st version

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Testing: 1st rack travel in: 11.60 Speed rpm : 1230...1245 2nd rack travel in: 4.00 : 1315...1345 Speed rom 4th rack travel in: 1390 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 225 Rack travel in mm : 5.8 Testing: Speed : 100 rpm Minimum rack trave: 7.20 Speed : 225 rpm Rack travel in mm: 5.70...5.90
Rack travel in mm: 2.00
Speed rpm: 340...380 Speed rpm : 450 Maximum rack trave: 1.00 TORQUE CONTROL 1st speed rpm : 1000 Aneroid/Altitude Compensator Test

Torque control curve - 1st version Rack travet in m: 12.60...12.70 2nd speed rpm : 1200 Rack travel in m: 12.50...12.70

1st version Setting rpm : 1000 hPa : 700 Speed rom Pressure : 12.60...12.70 Rack travel mm

Measurement Speed 1/min: 1000

1st pressure hPa : 300 Rack travel in m: 12.30...12.40

2nd pressure hPa : 260
Rack travel in m: 11.70...12.00
Rack travel in m: 11.50...11.60

FUEL DELIVERY CHARACTERISTICS

1st version Speed rpm : 600 Del.quantity cm3/: 85.5...86.5 1000 s: (83.5...88.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 Speed rpm : 1230...1245

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...140.0 1000 s: (127.0...143.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 225
Rack travel in mm : 5.70...5.90
Del.quantity cm3/ : 7.0...12.0
1000 s: (4.5...14.5) cm3 : 3.50 Spread

1000 s: (5.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

**APPLICATION** 

Omnibus

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 27...29 : 2.80...2.90 : (2.75...2.95) Note remarks Prestroke mm : CUM 8,3 b 9 : 22.01.92 : 29.11.91 Test sheet Rack travel in mm : 10.50 Edition Firing order : 1-5- 3- 6- 2- 4 Replaces Test oil : ISO-4113 Combination no. : 0 400 836 041 Phasing : 0-60-120-180-240-300 Phasing Injection pump Tolerance + - ° : 0.50 (0.75) Pump designation: PES6A100D320/3RS2691 Time to cyl. no. : 1 EP type number : 9 410 230 028 Governor BASIC SETTING Governor design. : RQV350...1100AB1227-1st speed rpm: 1100 Governer no. : 0 420 213 113 Rack travel in mm : 12.60...12.70 Customer-spec, information Customer : CDC Deliquantity cm3/: 12.6...12.8 : 6 CT 8.3 Engine 100 s: (12.4...13.1) 1st version kW : 157.0 Spread cm3 : 0.4Rated speed : 2200 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Test oil Rack travel in mm: 5.2...5.4 inlet temp. °C : 38...42 Del.quantity cm3/: 1.8...2.2 100 s: (1.5...2.4) Overflow valve cm3 : 0.6 Spread : 1 419 992 198 100 s: (0.8) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 350 **Opening** travel mm : 1.80...2.30 : 207...210 pressure, bar 2nd speed rpm : 460 travel mm : 1.60...2.10 Orifice plate 3rd speed : 510 man : 2.00...2.50 diameter mm : 0,6 travel mm 4th speed : 630 rpm : 2.70...3.20 travel mm Test lines : 1 680 750 014 : 1150 5th speed rpm : 7.30...7.80 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x2.00x600 x Length mm Control-lever position Degree: -1 Speed rpm : 1275 Rack travel in mm : 11.30...13.90 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values BEGINNING OF DELIVERY 1st version

C14

Speed rpm : 1100 Aneroid pressure h: 900 : 126.5...128.5 Del.quantity 1000 : (124.0...131.0) Spread cm3: 4.00 1000 : (6,50) RATED SPEED 1st version Control Lever position degrees: 112...120 Testing: 1st rack travel in: 11.60 Speed rpm : 1145...1155 2nd rack travel in: 4.00 rpm : 1255...1285 Speed 4th rack travel in: 1350 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 63...71 : 350 rom Rack travel in mm: 5.20...5.40 Rack travel in mm : 2.00 Speed : 570...630 PON TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.60...12.70 2nd speed rpm : 500 Rack travel in m: 12.60...12.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 900 Rack travel mm : 12.60...12.70 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.90...10.10 2nd pressure hPa : 405 Rack travel in m: 10.90...11.00 3rd pressure hPa : 535 Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS 1st version Ameroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 79.0...83.0 1000 s: (76.5...85.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.60 rpm : 1145...1155 Speed STARTING FUEL DELIVERY Speed rom Del.quantity cm3/: 165.0...185.0 1000 s: (162.0...188.0) Rack travel in mm : 15.30...15.70 LOW IDLE Speed rpm: 350
Rack travel in mm: 5.20...5.40
Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5) cm3 : 6.00Spread 1000 s: (8.00) Remarks: Limit shutoff stop screw to 1.0 mm. Start-of-delivery mark is at 7° after start of delivery.

Speed

START CUT-OUT

1/min: 260 (280)

Note remarks

Test sheet : MB 5,7 n 11 : 18.12.91 Edition

: 21.1.88 Replaces Test oil : ISO-4113

Combination no. : 0 400 846 336

Injection pump

Pump designation : PES6A90D410RS2293W

: 0 410 896 049 EP type number

Governor

Governor design. : RQV300...1425AB740L

Coverner no. : 0 420 212 037

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : OM 352 A

1st version kW : 115.0 Rated speed : 2850

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.15...2.25 Prestroke mm

: (2.10...2.30) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1400

Rack travel in mm : 10.90...11.00

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.4)

2nd speed rpm : 300.0 Rack travel in mm : 7.5...7.7

Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7) Spread

cm3 : J.2 100 s: (0.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460 : 8.40...8.60 travel mm

: 950 2nd speed rpm

: 5.20...5.50 travel mm 3rd speed : 775 rom

travel mm

: 4.10...4.60 4th speed : 550 rpm

2.70...3.00 travel mm

: 300 5th speed rpra

: 0.70...1.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1420

Rack travel in mm : 15.20...17.80

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Del.quantity : 71.5...72.5 1000 : (69.5...74.5) : 3.00 Spread cm3 1000 : (4.50) RATED SPEED 1st version Control Lever position degrees: 110...118 Testing: 1st rack travel in: 9.90 rpm : 1455...1465 Speed 2nd rack travel in: 4.00 Speed rpm : 1560...1590 4th rack travel in: 1700 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 64...72 Testing: Speed rpm : 100 Minimum rack trave: 9.10 Speed rpm : 300 Rack travel in mm : 7.50...7.70 CONSTANT REGULATION Speed rpm : 370...520 START CUT-CUT Speed 1/min: 220 (240) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.90 rpm : 1455...1465 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 71.0...81.0 1000 s: (68.0...84.0)

Remarks:

**C17** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 2.65...2.75 Note remarks : (2.60...2.80) Rack travel in mm: 10.50 : IHC 7,6 y 1 : 18.12.91 Test sheet : 1-5-3-6-2-4 Firing order Edition : 8.10.91 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 400 846 580 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6A95D32ORS2779 Time to cyl. no. EP type number : 0 410 896 903 Governor BASIC SETTING Governor design. : RQV350...1350AB1248-1st speed rom: 1350 : 0 420 213 121 Governer no. Rack travel in mm : 12.30...12.40 Customer-spec. information Customer : NAVISTAR Del.quantity cm3/: 8.4...8.6 Engine : DTA 360 100 s: (8.2...8.8) 1st version kW : 138.0 Spread cm3 : 0.3Rated speed : 2700 100 s: (0.6) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0Test oil Rack travel in mm: 5.9...6.1 inlet temp. °C Del.quantity cm3/: 1.7...2.1 100 s: (1.5...2.3) : 38...42 Overflow valve om3 : 0.3 Spread : 2 417 413 038 100 s: (0.5) Inlet press., bar: 2.80 (B) Setting of injection pump with governor Test nozzle holder assembly : 1 688 901 110 GUIDE SLEEVE TRAVEL 1st speed rpm : 1350 7.30...7.50 Opening travel mm : 250...253 pressure, bar : 1460 2nd speed rom : 8.10...8.50 : 550 : 3.10...3.70 travel mm Orifice plate 3rd speed rpin diameter mm : 0.5 travel mm 4th speed : 350 rpm : 1.30...1.70 travel mm Test Lines : 1 680 750 008 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter x Wall thickness 1st version x Length mm : 6.00x2.00x600 rpm : 1350 Speed Aneroid pressure h: 900 Del.quantity : 84.0...88.0) (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. : 3.50 Spread cm3 : (6.00) per values 1000 BEGINNING OF DELIVERY RATED SPEED

Test pressure, bar: 27...29

1st version

Control lever

position degrees: 44...52

Testing:

1st rack travel in: 11.30

rpm " 1390...1420 Speed

2nd rack travel in: 4.00

Speed re : 1525...1535 4th rack travel in: 1625

pm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 11...19

Testing:

Speed : 100 rom

Minimum rack trave: 9.00

rpm : 350 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 350...500 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed man.

hPa : 900 Pressure

: 12.30...12.40 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.40

2nd pressure hPa : 215

Rack travel in m: 10.80...10.90

3rd pressure hPa : 345

Rack travel in m: 11.60...12.00

START CUT-OUT

1/min : 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 75.0...79.0 1000 s: (73.0...81.0)

BREAKAWAY

**C19** 

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1390...1420 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...170.0

1000 s: (125.0...175.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 17.0...21.0

1000 s: (15.0...23.0)

cm3 : 3.50 Spread

1000 s: (5.50)

Remarks:

: NAVISTAR #1816728C91

Limit shutoff stop screw to 1.0 mm.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of celivery

Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5- 3- 6- 2- 4 Note remarks : MB 6,0 j 4 : 22.01.92 Test sheet Edition Phasina : 0-60-120-180-240-300 : 19.3.91 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 0 400 846 591 BASIC SETTING Injection pump 1st speed rpm: 1400 Pump designation : PES6A95D410RS2797 EP type number : 0 410 896 900 Rack travel in mm : 9.90...10.00 Governor : RQV300...1400AB1065-Governor design. Del.quantity cm3/ : 5.8...6.0 22L : 0 420 212 226 Governer no. 100 s: (5.6...6.2) Customer-spec. information Spread cm3 : 0.3Customer : MERCEDES-BENZ 100 s: (0.6) : OM 366 Engine 2nd speed rpm : 300.0
Rack travel in mm : 8.9...9.1 1st version kW : 97.0 : 2800 Rated speed Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL 1st speed rpm : 300 Inlet press., bar: 1.50 : 0.80...1.30 travel mm 2nd speed : 500 rpm Test nozzle holder : 2.30...2.80 travel mm : 0 681 343 009 : 750 assembly 3rd speed man : 4.10...4.30 travel mm Openina 4th speed 1500 man pressure, bar : 172...175 travel mm : 8.50...8.60 GUIDE SLEEVE POSITION Test lines : 1 680 750 015 Control-lever position Degree: -1 Outside diameter rpm : 1450 Speed x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x1.50x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version rpm : 1400 : 58.0...60.0 Set equal delivery quant. Speed per values \_\_\_ Del.quantity 1000 : (56.0...62.0) BEGINNING OF DELIVERY : 3.50 Spread cm3 Test pressure, bar: 25...27 1000 : (6.00)

RATED SPEED

Prestroke mm

: 3.20...3.30

: (3.15...3.35)

1st version Control lever

position degrees: 109...117

Testing:

1st rack travel in: 8.90

rpm : 1450...1460 Speed

2nd rack travel in: 4.00

rpm : 1540...1570 Speed

4th rack travel in: 1670

rpm : 0.00...1.09Speed

LOW IDLE 1 Control lever

position degrees: 75...83

Tescina:

Speed rpm : 100 Minimum rack trave: 10.50 rpm : 300 Speed

Rack travel in mm : 8.90...9.10

CONSTANT REGULATION

rpm : 500...650 Speed

TORQUE CONTROL

Dimension a mm : 1.40

Torque control curve - 1st version

1st speed rpm : 1400

Rack travel in m: 9.90...10.00

2nd speed rpm : 400

Rack travel in m: 11.30...11.60

3rd speed rpm:: 650

Rack travel in m: 11.00...11.20 th speed rpm : 900

4th speed

Rack travel in m: 10.40...10.70

START CUT-CUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 400 Speed

Del.quantity cm3/: 49.0...52.0

1000 s: (46.5...54.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

Note remarks

Test sheet : MB 6,0 i 6 : 22.C1.92 Edition

Replaces : 26.7.91 Test oil : ISO-4113

Combination no. : 0 400 846 594

Injection pump

Pump designation : PES6A95D41ORS2797 : 0 410 896 900 EP type number

Governor

: RQV300...1400AB1065-Governor design.

26L

Governer no. : 0 420 212 230

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M 366

: 95.0 1st version kW Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 5.8...6.0

100 s: (5.6...6.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 8.9...9.1

Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.4)

ະໜີ : 0.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed 300 rom:

travel mm 0.80...1.30 500 2nd speed ממיז

travel nm

2.30...2.30 3rd speed : 750 mon

: 4.10...4.30 travel mm

: 1500 4th speed rpm : 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Del.quantity : 58.0...60.0

1000 : (56.0...62.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 109...117

Testing:

1st rack travel in: 8.90

Speed rpm : 1450...1460

2nd rack travel in: 4.00

Speed rpm : 1540...1570

4th rack travel in: 1670

rpm : 0.90...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 75...83

Testing:

Speed rpm : 100 Minimum rack trave: 10.50

Speed rpm : 300 Rack travel in mm : 8.90...9.10

CONSTANT REGULATION

rpm : 500...650 Speed

TORQUE CONTROL

Dimension a mm : 1.40

Torque control curve - 1st version

1st speed rpm : 1400 Rack travel in m: 9.90...10.00

2nd speed rpm : 400

Rack travel in m: 11.30...11.60

3rd speed rpm : 650

Rack travel in m: 11.00...11.20

4th speed rpm : 900

Rack travel in m: 10.40...10.70

START CUT-CUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400 Del.quantity cm3/: 49.0...52.0

1000 s: (46.5...54.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.90

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 14.60...15.00

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

Note remarks

: FIA 5,9 e 2 Test sheet Edition : 31.01.92

Replaces Test oil : ISO-4113

Combination no. : 0 400 846 598

Injection pump

Pump designation : PES6A90D410RS2813 EP type number : 0 410 896 089

Governor

Governor design. : RQV300...1050AB1265-

: 0 420 212 234 Governer no.

Customer-spec, information Customer : IVECO-FIAT

: 8065.25.094 Engine

: 145.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Cverflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 7.9...8.0

100 s: (7.7...8.2)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 400.0 2nd speed Rack travel in mm: 8.3...8.5 Del.quantity cm3/: 1.0...1.4

100 s: (0.8...1.6) cm3 : 0.2 Spread

100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 380 rpm : 1.60...2.10 travel mm

rpm : 400 2nd speed

: 2.00...2.50 travel mm 3rd speed : 460 rpm

: 2.60...3.10 travel mm

4th speed : 740 rpm : 4.70...5.20 travel mm

5th speed : 1105 rpm

: 8.10...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1180 Speed

Rack travel in mm : 9.90...12.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1050 Speed rpm

Speea Del.quantity 1000 : 79.5...80.5

: (77.5...82.5)

Spread

cm3 : 3.00

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 112...120

Testing:

1st rack travel in: 11.20 Speed rpm : 1090...1100 2nd rack travel in: 4.00

rpm : 1190...1220 Speed

4th rack travel in: 1260

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 75...83

Testing:

Speed rpm : 300

Minimum rack trave: 10.80

rpm : 400

Rack travel in mm : 8.30...8.50

CONSTANT REGULATION

rpm : 450...600 Speed

TORQUE CONTROL

Dimension a mm : 1.30

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.20...12.30

2nd speed rpm : 500
Rack travel in m: 13.50...13.60
3rd speed rpm : 740
Rack travel in m: 13.20...13.40

4th speed rpm : 900

Rack travel in m: 12.50...12.80

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500

hPa : 700 Pressure

Rack travel mm : 13.50...13.60

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 12.20...12.30 2nd pressure hPa : 580 Rack travel in m: 13.30...13.40

3rd pressure hPa : 540

Rack travel in m: 12.80...13.00

START CUT-OUT

1/min: 320 (340) Speed

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 1090...1108

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...120.0 1000 s: (107.0...123.0)

Rack travel in mm : 19.50...27.00

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : IHC 7,6 z 1 Edition : 18.12.91 Replaces : 22.11.91 Test oil : ISO-4113

Combination no. : 0 400 846 603

Injection pump

Pump designation : PES6A95D32ORS2779 : 0 410 896 903 EP type number

Governor

: RQV350...1350AB1251-Governor design.

Governer no. : 0 420 213 125

Customer-spec, information Customer : NAVISTAR

Engine : DT 360

1st version kW : 142.0 Rated speed : 2700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test rozzle holder

: 1 688 901 110 assembly

Opening

pressure, bar : 250...253

Orifice plate

diameter mm : 0.5

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.05...2.75

(2.62...2.80)

Rack travel in mm: 9.00.. 12.00

Firing order: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - \*

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 1.7...2.1

100 s: (1.4...2.3)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed : 7.30...7.50 travel mm

rom : 1460 2nd speed

: 8.10...8.50 travel mm

rpm : 550 3rd speed

: 3.10...3.70 travel mm

350 4th speed rpm

1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350 Aneroid pressure h: 900

Del.quantity : 84.0...86.0

1000 : (82.0...88.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 44...52

Testina:

ist rack travel in: 11.30

rpm : 1390...1420 Speed

2nd rack travel in: 4.00 rpm : 1525...1535 Speed

4th rack travel in: 1625

max : 0.30...1.60Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

rpm : 100 Speed Minimum rack trave: 9.00 Speed וחסרו

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed : 350...500 rom

TORQUE CONTROL

Dimension a mm : 9.80

Torque control curve - 1st version

1st speed rpm : 1350

Rack travel in m: 12.30...12.40

rpm : 850 2nd speed

Rack travel in m: 13.10...13.20

3rd speed : 1200 rpm

Rack travel in m: 12.70...12.90

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 900

: 13.10...13.20 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.30 2nd pressure hPa : 265 Rack travel in m: 10.30...10.40

3rd pressure hPa : 560

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min : 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 850 Speed man

Del.quantity cm3/: 96.0...900.0 1000 s: (94.0...102.0)

cm3 : 5.00 Spread

1000 s: (7.00)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 60.5...64.5

1000 s: (58.5...66.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

: 1390...:420 Speed rem

STARTING FUEL DELIVERY

Speed rem

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.90...6.10

Del.quantity cm3/: 17.0...21.0 1000 s: (14.5...23.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: NAVISTAR #1818798091

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : IHC 7,6 y 2 : 18.12.91

Edition : 22.11.91 Replaces Test oil : ISO-4113

Combination no. : 0 400 846 604

Injection pump

Pump designation : PES6A95D32ORS2779 EP type number : 0 410 896 903

Governor

Governor design. : PQ\/350 ...1350AB1248-

: 0 420 213 126 Governer no.

Customer-spec. information Customer : NAVISTAR

: DT 360 Engine

1st version kW : 127.0 : 2700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

assembly : 1 688 901 110

Opening 1

pressure, bar : 250...253

Orifice plate

diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29 Prestroke mm : 2.65...2.75 : (2.60...2.80)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - 1 : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 7.9...8.1

100 s: (7.7...8.3)

Spread cm3 : 0.3

100 s (0.6)

2nd speed rpm : 350.0Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 1.7...2.1 100 s: (1.4...2.3)

cm3 : U.3 Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350 : 7.30...7.50 travel mm

2nd speed rpm : 1460

travel mm : 8.10...8.50

3rd speed rpm : 550

: 3.10...3.70 travel mm

: 350 4th speed rpm

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1350 Aneroid pressure h: 900

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 44...52

Testing:

1st rack travel in: 10.90

Speed rpm : 1390...1420

2nd rack travel in: 4.00

rpm : 1525...1535 Speed

4th rack travel in: 1625

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed rom : 100 Minimum rack trave: 9.00

rpm : 350 Speed

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rom hPa : 900 Pressure

Rack travel mm : 11.90...12.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 110

Rack travel in m: 10.40...10.50

3rd pressure hPa : 300

Rack travel in m: 11.20...11.60

START CUT-OUT

1/min: 270 (280) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 71.0...75.0 1000 s: (69.0...77.0)

BREAKAWAY

full load rack tr: 10.90

1mm rack travel less than

Speed rpm : 1390...1420

STARTING FUEL DELIVERY

1st version

Speed rpm : 100 Del.quantity cm3/ : 135.0...155.0 1000 s: (130.0...160.0)

Rack travel in mm : 16.20...17.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 17.0...21.0 1000 s: (14.5...23.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: NAVISTAR #1816726C92

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks : DAF 6,2 s 1 Test sheet Phasing : 0-60-120-180-240-300 Edition : 24.01.92 Replaces Tolerance + - 6 : 0.50 (0.75)Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 400 846 608 BASIC SETTING Injection pump Pump designation : PESSA950320RS2796 1st speed rpm: 850 EP type number : 0 410 896 901 Governor Rack travel in mm: 12.80...12.90 Governor design. : RQ300/1300AB1253-3R Governer no. : 0 420 201 654 Del.quantity cm3/: 8.4...8.5 Customer-spec. information 100 s: (8.2...8.7) Customer : DAF Spread cm3 : 0.3: NS 156G Engine 100 s: (0.6) 1st version kW : 156.0 rpm : 300.0Rated speed : 2600 2nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.6...1.0 100 s: (0.3...1.2) Spread cm3: 3.3 100 s: (0.5) TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 419 992 198 Control-lever position Degree: -2 rpm : 770 Inlet press., bar: 1.50 Rack travel in mm : 7.50...8.50 Test nozzle holder : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Openina 1st version : 172...175 pressure, bar Speed rpm : 850 Aneroid pressure h: 1000 Del.quantity : 84.3....87.5) Test lines : 1 680 750 089 : 3.50 Spread cm3Outside diameter 1000 : (6.00) x Wall thickness : 8.00x2.50x600 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed rpm Rack travel in mm: 8.0 BEGINNING OF DELIVERY

4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 7.70 rpa Speed Rack travel in mm: 6.40...6.60 Rack travel in mm : 2.00 : 525...565 Speed rom TORQUE CONTROL : 0.50 Dimension a mm Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 12.60...12.70 and speed rpm : 770
Rack travel in m: 14.20...14.80 2nd speed : 900 3rd speed ripm Rack travel in m: 13.60...14.20 4th speed rpm : 1000 Rack travel in m: 12.80...13.20 Aneroid/Altitude Compensator Test 1st version Setting Speed rom : 600 hPa : 1000 Pressure Rack travel mm : 12.80...12.90 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.90...11.10 2nd pressure hPa : 250 Rack travel in m: 12.30...12.40 3rd pressure hPa : 90 Rack travel in m: 11.20...11.40 FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 1000
Speed rpm : 1290
Del.quantity cm3/: 87.0...89.0
1000 s: (84.5...91.5)
Aneroid pressure h: Speed rpm : 600
Del.quantity cm3/: 45.5...46.5
1000 s: (43.5...48.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.60 Speed rpm : 1325...1340

LOW IDLE

Remarks:

APPLICATION

**Omnibus** 

Note remarks

Test sheet : MMM 3,1 d : 24.01.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 863 019

Injection pump

Pump designation : PES3A90D320/3RS2826

EP type number : 0 410 893 007

Governor

Governor design. : RSV325...1150A5c505-

5R

: 0 420 233 239 Governer no.

Customer-spec. information Customer : MWM

: TD 226 B3 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 : (2.90...3.10) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3 Phasing : 0-120-240

Tolerance + - °  $\pm 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00 & maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

rom : 7501st speed

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 6.7...6.8

100 s: (6.5...7.0)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 6.1...6.3 Del.quantity cm3/ : J.5...1.1 100 s: (0.3...1.3)

Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 750 : 67.5...68.5 1000 : (65.5...70.5) Del.quantity 1000

cm3 : 3.00 Spread 1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 94...102

Testing:

1st rack travel in: 8.90

rpm : 1200...1210 Speed

2nd rack travel in: 4.00 rpm : 1230...1260 Speed 3rd rack travel in: 4.00

Speed rpm: 1245...1275 4th rack travel in: 1410

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Setting point w/out bumper spring

Speed rom: 325
Rack travel in mm: 5.7
Speed rom: 325 Rack travel in mm : 6.10...6.30 Rack travel in mm : 2.00 rpm : 400...460 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1150 1st speed

Rack travel in m: 9.80...10.00

2nd speed rpm : 500

Rack travel in m: 9.90...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1150

Del.quantity cm3/: 75.5...77.5 1000 s: (73.0...80.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 8.90

rpm : 1200...1210 Speed

STARTING FUEL DELIVERY

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 4,1 k 1 : 18.12.91 Edition : 29.11.91 Replaces Test oil : ISO-4113 Combination no. : 0 400 864 088 Injection pump Pump designation : PES4A85D410/3RS2799 : 0 410 884 944 EP type number Governor : RSV325...1250A2c2253 Governor design. -2L : 0 420 232 556 Governer no. Customer—spec. information Customer : BF4L913 Engine 1st version kW : 78.0 Rated speed : 2500 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening | pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1250 Rack travel in mm : 11.70...11.80 Del.quantity cm3/: 8.4...8.5 100 s: (8.2...8.7) Spread cm3 : 0.3100 s: (0.5) rpm : 325.0 2nd speed Rack travel in mm: 7.5...7.7 Del.quantity cm3/: 1.2...1.8 100 s: (1.0...2.0) cm3 : 0.2 Spread 100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 2.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1250 Aneroid pressure h: 1000 Del.quantity : 84.0...87.0) cm3 : 3.00 1000 : (5.00) Spread RATED SPEED 1st version Control lever position degrees: 91...99 Testing: 1st rack travel in: 10.70 rpm : 1290...1300 Speed 2nd rack travel in: 4.00

rpm : 1320...1350

Speed

Prestroke mm

Test pressure, bar: 25...27

: 2.45...2.55

: (2.40...2.60)

4th rack travel in: 1480 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever

position degrees: 60...68 Setting point w/out bumper spring

rpm : 325 Rack travel in mm: 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Rack travel in mm: 5.90...6.10 Rack travel in mm: 2.00 rpm : 340...400 Speed

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 11.70...11.80

2nd speed rpm : 500
Rack travel in m: 12.10...12.20
4th speed rpm : 800

Rack travel in m: 11.90...12.10

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 1000 Pressure

Rack travel mm : 12.10...12.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.80...10.90 2nd pressure hPa : 300 Rack travel in m: 11.80...11.90

3rd pressure hPa : 230

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 520 rpm : 800 Speed

Del.quantity cm3/: 80.0...82.0 1000 s: (77.5...84.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 58.0...60.0 1000 s: (56.0...62.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.70

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0)

Rack travel in mm : 17.60...18.00

Remarks:

APPLICATION

Compressor

007

## Note remarks

Test sheet : KHD 1 g 52 Edition : 31.01.92

Replaces : -

Test oil : ISO-4113

Combination no. : 0 400 874 251

Injection pump

Pump designation : PES4A85D410RS2732-1 EP type number : 0 410 884 943

Governor

Governor design. : RSV325...1175A8C2223

-3L

Governer no. : 0 420 232 574

Customer—spec. information Customer : KHD

Engine : F4L913

1st version kW : 56.0 Rated speed : 2350

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 E43 GO9

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 6.8...6.9

100 s: (6.6...7.1)

Spread cm3:0.3

100 s: (0.4)

2nd speed rpm : 325.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6) Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm: 1175

Del.quantity : 68.0...69.0 1000 : (66.0...71.0)

Spread cm3 : 3.00 1000 : (4.50)

RATED SPEED

1st version Control lever

position degrees: 102...110

Testing:

1st rack travel in: 8.90

Speed rpm : 1215...1225

2nd rack travel in: 4.00

Speed rpm : 1245...1275

3rd rack travel in: 4.00

rpm : 1250...1280 Speed 4th rack travel in: 1425 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm: 5.6 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 : 450...510 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1175 1st speed Rack travel in m: 9.90...10.00 rpm : 500 2nd speed Rack travel in m: 10.50...10.60 4th speed rpm : 820 Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800 Del.quantity cm3/: 61.0...63.0 1000 s: (58.5...65.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1215...1225 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0) Rack travel in mm : 17.10...17.30 Remarks: : RENAULT APPLICATION

Tractor (tractor engines)

Note remarks

Test sheet : DAF 6,2 q 3 : 24.01.92 : 20.12.91 Edition Replaces

Test oil : ISO-4113

Combination no. : 0 400 876 378

Injection pump

Pump designation : PES6A950320RS2693 EP type number : 0 410 896 914

Governor

Governor design. : RSV300...1300A0c2248

-2R Governer no.

: 0 420 233 274

Customer-spec. information Customer : DAF

Engine : NT 133

: 133.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 7.6...7.7

100 s: (7.4...7.9)

Spread om3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 6.3...6.5

Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2) cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 700

76.5...77.5 1000 : (74.5...79.5) cm3 : 3.50 Del.quantity

Spread 1000 : (6.00)

RATED SPEED

1st version

Control Lever position degrees: 104...112 Testina: 1st rack travel in: 9.50 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1390...1420 3rd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1570 rpm : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring ripni : 300 Rack travel in mm: 5.9 Speed : 300 rpm Rack travel in mm : 6.30...6.50 Rack travel in mm: 2.00 Spead : 560...620 r om TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1290
Rack travel in m: 10,50...10.60 1st speed 2nd speed rom : 500 Rack travel in m: 11.80...11.90 rpm : 1070 4th speed Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 700 Pressure Rack travel mm : 11.40...11.50 Measurement Speed 1/min: 600 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 160 Rack travel in m: 10.70...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 nom : 1290 Speed Del.quantity cm3/: 73.0...75.0 1000 s: (70.5...77.5) Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 50.5...51.5 1000 s: (48.5...53.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.50 Speed rpm : 1340...1350

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.30...6.50
Det.quantity cm3/ : 6.0...10.0
1000 : (3.5...12.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

D11

Note remarks

Test sheet Edition

: MB 14,6 k : 02.10.89 Replaces : 2.86

Test oil

: ISO-4113

Combination no.

: 0 401 848 732

Injection pump

Pump designation : PE8P120A320LS3807-10

EP type number

: 0 411 828 713

Governor

Governor design. : RQV300...1150PA545

Governer no.

: 0 421 813 268

Customer-spec. information

Customer

: DAIMLER-BENZ

Engine

: OM 422 A

1st version kW

: 243.0

Rated speed

: 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...110

Test nozzle holder

assembly

: 1 688 901 019

Opening

pressure, bar

: 207...210

Orifice plate

diameter mm

3,0:

Test lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 4.00...4.10

: (3.95...4.15)

Rack travel in mm: 9.00...12.00 Firing order: 8-7-2-6-3-5-4-1

Fhas ing

: 0-45-90-135-180-225-

270-315

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed

Spread

rpm: 1150

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 15.7...15.9

100 s: (15.4...16.2)

cm3 : 3.5

100 s: (0.9)

rpm : 300.0

2nd speed

Rack travel in mm: 5.2...5.4 Del.quantity cm3/: 1.2...1.8 100 s: (0.9...2.1)

Spread

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 travel mm : 1.60...1.80

2nd speed rpm : 800

travel mm

: 6.00...6.20

3rd speed rpm: 1200

travel mm 4th speed rpm : 1260

: 8.10...8.30

travel mm

: 9.50...10.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1190

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1150 Speed 3rd speed rpm : 900 Rack travel in m: 10.8...11.0 Aneroid pressure h: 700 Del.quantity : 157.5...159.5 1000 : (154.5...162.5) Areroid/Altitude cm3 5.00 1000 (9.00) Spread Compensator Test RATED SPEED 1st version Setting : 500 1st version Speed rpm Control Lever hPa : -Pressure : 10.30...10.40 position degrees: 50...58 Rack travel mm Testing: Measurement 1st rack travel in: 9.70  $1/\min : 500$ Speed : 1190...1200 Speed rpm 2nd rack travel in: 4.00 1st pressure hPa : 400 : 1250...1280 Rack travel in m: 10.40...10.50 Speed rom 4th rack travel in: 1350 2nd pressure hPa : 470 Speed rom : 0.00...1.00 Rack travel in m: 10.90...11.10 START CUT-OUT 2nd version Control Lever position degrees: 50...58 1/min: 220 (240) Speed Testing: FUEL DELIVERY CHARACTERISTICS 1st rack travel in: 9.70 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 1st version rpm : 1235...1265 Aneroid pressure h: 700 Speed 4th rack travel in: 1350 : 750 Speed rpm Del.quantity cm3/: 173.5...175.5 1000 s: (170.5...178.5) Spread cm3: 7.00 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever 1000 s: (12.0) Aneroid pressure h: position degrees: 13...21 rpm : 500 Speed Del.quantity cm3/: 139.0...141.0 Testing: 1000 s: (136.0...144.0) Speed rpni Minimum rack trave: 6.70 Spread cm3 : 7.00 1000 s: (12.0) : 300 rpm Rack travel in mm: 5.00...5.20 Rack travel in mm: 2.00 Speed rpm: 375...445 2nd version Aneroid pressure h: 700 Speed rpm : 1150 Del.quantity cm3/ : 157.5...159.5 1000 s: (154.5...162.5) TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version Aneroid pressure h: 700 1st speed rpm : 1150 rpmin: 600 Speed Del.quantity cm3/: 167.0...173.0 1000 s: (164.0...176.0) Aneroid pressure h: 700 Rack travel in m: 10.70...10.80 rpm : 750 2nd speed Rack travel in m: 11.00...11.20 : 900 3rd speed rpm : 900 Speed rpm Rack travel in m: 10.90...11.20 Del.quantity cm3/: 165.0...169.0 1000 s: (162.0...172.0) Torque control curve - 2nd version Aneroid pressure h: rpm : 1150 : 500 1st speed Speed rpm Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) Rack travel in m: 10.7...10.8 2nd speed rpm : 600 Rack travel in m: 11.4...11.5

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rpm : 1190...1200

Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

Version 1: New version with additional maximum-speed control spring Version 2: Old version with no additional maximum-speed control spring

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 11,9 u4 : 22.01.92 Edition : 30.11.90 Replaces : ISO-4113 Test oil Combination no. : 0 402 036 742 Injection pump Pump designation : PES6P120A720/3LS3255 EP type number : 0 412 026 739 Governor Governor design. : RQ300/1100PA813-7 : 0 421 801 474 Governer no. Customer-spec. information Customer : MAN Engine : D2866LF01 1st version kW : 273.0 Rated speed : 2200 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina pressure, bar : 207...210 Orifice plate diameter nm : 0,3

: 6-2-4-1-5-3 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BEGINNING OF DELIVERY DIFFERENCE betw. rack tray. m: 5.90...6.10 % maximum rack tra: 14.5...15.5 Difference ° CS : 2.00...4.00 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 15.00...15.10 Del.quantity cm3/: 24.2...24.4 100 s: (23.9...24.7) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 300.0Rack travel in mm : 5.0..5.4 Del.quantity cm3/: 1.7..2.3 100 s: (1.4..2.6) Spread cm3 : 0.8100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 650 Speed Rack travel in mm : 16.00...17.60 Test Lines : 1 680 750 067 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter 1st version x Wall thickness Speed rpm : 700 : 6.00X1.50X1000 x Length mm Aneroid pressure h: 1200 242.0...244.0 1000 : (239.0...247.0) cm3 : 5.00 Del.quantity (A) Injection pump setting values Insp. values in parentheses Spread Set equal delivery quant. 1000 : (9.00) per values RATED SPEED BEGINNING OF DELIVERY 1st version Test pressure, bar: 30...32

Prestroke mm

: 3.70...3.80 : (3.65...3.85)

Rack travel in mm : 14.50...15.50

Setting point:

Speed : 650 rpm Rack travel in mm: 16.8

Testina:

1st rack travel in: 13.80

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rom : 1200...1230 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 5.2

Testing:

Speed : 200 rpm Minimum rack trave: 6.50

: 300 Speed rpm

Rack travel in mm : 5.10...5.30 Rack travel in mm : 2.00

Speed : 400...440 rom

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 14.80...14.90

2nd speed rpm : 700

Rack travel in m: 15.80...16.00 d speed rpm : 900

3rd speed

Rack travel in m: 15.10...15.30

Aneroid/Altitude

Compensator Test

1st version

Settina

rpm : 500 hPa : 1200 Speed rpm

Pressure

: 15.00...15.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 110
Rack travel in m: 12.00...12.10
3rd pressure hPa : 470

Rack travel in m: 14.00...14.40

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 1100 Del.quantity cm3/ : 230.0...236.0 1000 s: (227.0...239.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0

1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.00...5.40
Del.quantity cm3/ : 17.0...23.0
1000 s: (14.0...26.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MAN-NR. 2-7946

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6

start of delivery

Note remarks

Test sheet : PEN 16,2 b Edition : 24,01.92

: 10.2.89 Replaces Test oil : TSO-4113

Combination no. : 0 402 646 857

Injection pump

Pump designation : PE6P130A720RS7150 EP type number : 0 412 636 808

Governor

Governor design. : RQV250...900PA881

: D 421 813 676 Governer no.

Customer-spec. information Customer : PENTA

: TAMD 162 (HD) Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 922 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.60...3.70 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 29.6...29.9

100 s: (29.3...30.3)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 250.0 Rack travel in mm : 3.7...3.9 Del.quantity cm3/ : 1.7...2.2

100 s: (1.4...2.4)

cm3 : 3.5 Spread

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250 travel mm : 0.90...1.30

rpm : 350 2nd speed

travel mm : 2.00...2.60

3rd speed rpm : 700

travel mm : 4.50...5.10

: 925 4th speed rpm

: 7.60...7.80 travel mm

5th speed rpm : 985

travel mm : 8.40...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 980

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

Del.quantity : 290.3...203.0)

Spread

cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testing:

1st rack travel in: 9.30

Speed rpm : 925...935

2nd rack travel in: 4.00

rom : 975...1005 Speed

4th rack travel in: 1100

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 63...71

Testing:

Spead rpm : 100

Minimum rack trave: 5.30

Speed rpm : 250 Rack travel in mm : 3.70...3.90

CONSTANT REGULATION

Speed riom : 250...400

Aneroid/Altitude

Compensator Test

1st version

Measurement

Settina

Speed : 500 rom

hPa : 900 Pressure : 10.30...10.40

Rack travel mm

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 7.70...7.90

2nd pressure hPa : 310 Rack travel in m: 7.90...8.00

3rd pressure hPa : 660

Rack travel in m: 9.80...10.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 192.5...195.5

1000 s: (189.0...199.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.30

rpm : 925...935 Speed

LOW IDLE

Speed rpm: 250
Rack travel in mm: 3.70...3.90
Del.quantity cm3/: 17.0...22.0
1000 s: (14.5...24.5)
Spread cm3: 5.00
1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : SCA 9,0 L 4 : 18.12.91 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 646 909 Injection pump Pump designation : PE6P120A320RS71387 EP type number : 0 412 626 856 Governor Governor design. : RQV200...1100PA712-5 : 0 421 813 951 Governer no. Customer-spec. information Customer : SCANIA Engine : DS9 07 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 104 assembly Opening. : 250...253 pressure, bar Orifice plate diameter mm : 0.7 Test lines : 1 680 750 008 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 4.40...4.50 Prestroke mm : (4.35...4.55) Rack travel in mm : 9.00...12.00 **D19** 

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 11.80...11.90 Del.quantity cm3/: 15.0...15.2 100 s: (14.7...15.5) cm3 : 0.6Spread 100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm : 4.5...4.9 Del.quantity cm3/ : 1.2...1.6 100 s: (-) cm3 : 3.5 Spread 100 s: (0.8) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 225 1st speed : 0.90...1.30 travel mm : 350 2nd speed rom : 2.50...3.10 travel mm 3rd speed rpm : 650 travel mm 5.40...6.00 : 1145 4th speed rpm : 8.90...9.10 travel mm : 1280 5th speed rpin travel mm : 10.10...10.50 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1130Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rpm : 700

Del.quantity : 100.0...155.0)

Aneroid pressure h: 900

Speed

Spread

cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 114...122

Testing:

1st rack travel in: 10.80

rpri : 1140...1150 Speec

2nd rack travel in: 4.00

rpm : 1270...1300 Speed

4th rack travel in: 1400 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 61...69

Testing:

Speed rpm : 100

Minimum rack trave: 6.10

Speed rpm : 250 Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00 Speed rpm : 310...370

Aneroid/Altitude

Compensator Test

1st version

Settina

: 500 Speed rpm

hPa : 900 Pressure

: 11.80...11.90 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.30 2nd pressure hPa : 350 Rack travel in m: 11.50...11.60

3rd pressure hPa : 220

Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm\_ : 1100

Del.quantity cm3/: 145.0...153.0

1000 s: (143.0...155.0)

Aneroid pressure h: -

: 500 Speed rom

Del.quantity cm3/: 114.0...118.0

1000 s: (112.0...120.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.80

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Dei.quantity cm3/ : 115.0...145.0

1000 s: (-)

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Start-of-delivery setting with ROBO

diaphragm.

Note remarks

Test sheet : MB 9,6 a : 31.01.92 : 21.8.91 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 646 915

Injection pump

Pump designation : PE6P12OA32OLS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQ300/1050PA972 : 0 427 801 542 Governer nc.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 200.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack trazel in mm: 20.00...21.00

Firing order: 6-3-5-2-4-1

Phasina : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Dei.guantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.2...5.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600Aneroid pressure h: 800

Del.quantity : 182.0...184.0 1000 : (179.0...187.0)

cm3 : 5.00Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point: : 600 Speed rpm

Rack travel in mm : 20.0

rpm : 1090...1105 Speed 2nd rack travel in: 4.00 : 1165...1195 Speed rom 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.5 Testing: Speed rpm Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 5.20...5.90 Rack travel in mm : 2.00 Speed : 380...420 rom Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man hPa : 800 Pressure Rack travel mm : 12.40...12.60 Measurement Speed  $1/\min: 600$ 1st pressure hPa : 200 Rack travel in m: 10.50...10.70 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 1050 Speed rpm Del.quantity cm3/: 201.0...204.0 1000 s: (198.0...207.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1400 rpm\_ : 800 Speed Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0)

Testina:

1st rack travel in: 12.10

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...144.0 1000 s: (129.0...147.0) Spread cm3 : 8.00 1000 s: (12.0)

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 50.0...70.0 1000 s: (-)

Rack travel in mm : 10.20...10.50

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 9,6 r : 31.01.92 Test sheet Edition : 5.7.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 916 Injection pump Pump designation : PE6P120A320LS7836 EP type number : 0 412 626 854 Governor Governor design. : RQV300...1050PA797 : 0 421 813 884 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M401 LA : 200.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 105 assembly Opening pressure, bar : 207...210

Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 075 Outside diameter

x Wall thickness x Length mm : 8.00x2.50x1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values 023

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 600 Rack travel in mm : 12.40...12.60 Del.quantity cm3/: 18.2...18.4 100 s: (17.9...18.7) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 5.3...5.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6 Spread 100 s: (1.0) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed 1.00...1.50 travel mm

2nd speed rpm : 637 : 4.90...5.40 travel mm rpm : 830 3rd speed travel mm : 6.00...6.50 4th speed rpm : 1107 travel mm : 8.30...8.80 5th speed rpm : 1218 : 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1125 Speed Rack travel in mm : 15.20...17.20 FULL LOAD DELIV. AT FULL LOAD STOP

START CUT-OUT 1st version Speed rpm : 600 1/min : 240 (260) Speed Aneroid pressure h: 800 : 182.0...184.0 Del.quantity FUEL DELIVERY CHARACTERISTICS 1000 : (179.0...187.0) : 5.00 Spread cm3 1000 : (9.00) 1st version Aneroid pressure h: 1500 Speed rpm : 1050 Del.quantity cm3/: 201.0 . 204.0 1000 s: (193.0 . . . 207.0) RATED SPEED 1st version Control Lever cm3 : 8.00 Spread position degrees: 118...126 1000 s: (12.0) Aneroid pressure h: 1500 Testing: Speed man Del.quantity cm3/: 205.0...209.0 1000 s: (202.0...212.0) 1st rack thavel in: 12.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 cm3 : 8.00 Spread rpm : 1195...1225 1000 s: (12.0) Speed 4th rack travel in: 1300 Aneroid pressure h: Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 Speed rom : 0.00...1.001000 s: (129.0...137.0) LOW IDLE 1 cm3 : 8.00 Control Lever Spread position degrees: 80...88 1000 s: (12.0) Testina: Speed : 200 rpm BREAKAWAY Minimum rack trave: 7.60 Speed rpm : 300 1st version Rack travel in mm : 5.40...5.90 1mm rack travel less than CONSTANT REGULATION full load rack tr: 12.40 rpm : 300...500 rpm : 1090...1100 Speed Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed man Del.quantity cm3/: 200.0...220.0 1st version Settina 1000 s: (196.0...224.0) Speed rpm : 600 Pressure hPa : 800 Remarks: : 12.40...12.60 Rack travel mm Measurement  $1/\min : 600$ Speed 1st pressure hPa : 300 Rack travel in m: 10.50...10.70 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1050 Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -

: 800

: 100

Rack travel in m: 10.30...10.60

#### Note remarks

Test sheet : MB 9,6 r 4 Edition : 31.01.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 916T3

Injection pump

Pump designation : PE6P120A320LS7836 EP type number : 0 412 626 854

Governor

: RQV300...1050PA797 Governor design.

-17

: 0 421 813 884 Governer no.

Cust, part no. : T3

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 : 2100 Rated speed

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 33...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINVING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm: 20.00...21.00 Firing order: 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40 ... 12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.3...5.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300 : 1.00...1.50 travel mm

2nd speed rpm : 637

: 4.90...5.40 travel mm

3rd speed : 830 rpm

: 6.00...6.50 travel mm

4th speed : 1107 rpm

travel mm : 8.30...8.80

: 1218 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed mom : 1125 Rack travel in mm : 15.20...17.20 FULL LOAD DELIV. AT FULL LOAD STOP 1st Version Speed rpm : 600 Aneroid pressure h: 800 Del.quantity : 182.0...184.0 1000 : (179.0...187.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 118...126 Testing: 1st rack travel in: 12.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1195...1225 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 80...88 Testing: Speed (PD(II) Minimum rack trave: 7.60 : 300 rpm . Rack travel in mm : 5.40...5.90 CONSTANT REGULATION rpm : 300...500 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man Pressure hPa : 800 Rack travel mm : 12.40...12.60 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.50...10.70 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1050

Rack travel in m: 12.60...12.80

4th pressure hPa : 1150

Rack travel in m: 12.90...13.10 5th pressure hPa : Rack travel in m: 10.30...10.60 START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 : 1050 Speed rpm Del.quantity cm3/: 204.0...207.0 1000 s: (201.0...210.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1500 Speed rpm : 800 Del.quantity cm3/ : 209.0...213.0 1000 s: (206.0...216.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 131.0...133.0 1000 s: (128.0...136.0) cm3 : 3.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.50...5.60 Prestroke mm : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1 Test sheet : MB 9,6 o : 22.C1.92 Edition : 23,10.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 917 Phasing : 0-69-129-189-240-300 Injection pump Pump designation : PE6P12OA32OLS7834 Tolerance + - ° : 0.50 (0.75) : 0 412 626 841 EP type number Governor Time to cyl. no. Governor design: RQ300/950PA971 : 0 421 801 543 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 600 : MERCEDES-BENZ Customer Rack travel in mm : 14.50...14.70 : 0M4C1 LA Engine Del.guantity cm3/: 22.7...22.9 : 230.0 1st version kW : 1900 Rated speed 100 s: (22.4...23.2) TEST BENCH REQUIREMENTS cm3 : 0.5Spread Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 300.02nd speed Overflow valve Rack travel in mm: 6.3...6.9 : 1 417 413 025 Del.quaritity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6Inlet press., bar: 1.50 Spread 100 s: (1.0) Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 105 rpm : 600 assembly Speed Rack travel in mm : 19.20...20.80 Opening : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 600 Aneroid pressure h: 1100 : 227.0...229.0 Del.quantity 1000 : (224.0...232.0) : 1 680 750 075 Test lines : 5.00 Spread cm3 1000 : (9.00) Outside diameter x Wall thickness : 8.00X2.50X1000 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point:

: 600

rpm Rack travel in mm: 20.0

Speed

per values

Testina: 1st rack travel in: 13.90 **: 990...1005** Speed rom 2nd rack travel in: 4.00 : 1065...1095 Speed man 4th rack travel in: 1200 rom : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.6 Testina: Speed (Dill : 200 Minimum rack trave: 8.50 Speed : 300 rom Rack travel in mm : 6.30...6.90 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.35 : 950 2nd speed rom Rack travel in m: 14.90...15.10 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 1100 Rack travel mm : 14.50...14.70 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 700 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1400 Rack travel in m: 14.60...14.80 \* 4th pressure hPa : 1550 Rack travel in m: 14.90...15.10 5th pressure hPa : -Rack travel in m: 10.00...10.30

FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1800

rpm

Del.quantity cm3/: 236.0...239.0 1000 s: (233.0...242.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1800 Speed rpa 900 Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0)

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.90 Speed rpm : 990...1005

STARTING FUEL DELIVERY

#### Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1 Test sheet : MB 11,1 c : 22.01.92 Edition : 28.6.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 921 Phasina : 0-60-120-180-240-300 Injection pump Pump designation : PE6P120A320LS7837 Tolerance + - ° : 0.50 (0.75) EP type number : 0 412 626 842 Governor Time to cyl. no. : 6 Governor design. : RQ300/1050PA972-3 Governer no. : 0 421 801 565 BASIC SETTING Customer-spec. information 1st speed rpm: 600 Customer : MERCEDES-BENZ Rack travel in mm : 14.70...14.90 Engine : 0M441 LA Del.guantity cm3/: 23.4...23.6 : 250.0 1st version kW : 2100 Rated speed 100 s: (23.1...23.9) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 300.02nd speed Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2 Overflow valve : 1 417 413 025 100 s: (1.3...2.5) Inlet press., bar: 1.50 cm3 : 0.6Spread 100 s: (1.0) Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 assembly rpm : 600 Speed Rack travel in ma : 19.20...20.80 Openina : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0.8 Speed Del.quantity Test lines : 1 680 750 067

Spread

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

rpm : 600 Aneroid pressure h: 1000 : 234.0...236.0 1000 : (231.0...239.0) : 5.00 cm3 1000 : (9.00) RATED SPEED 1st version Setting point: Speed : 600 rom Rack travel in mm: 20.0

Testina:

1st rack travel in: 13.90

rom : 1090...1105 Speed

2nd rack travel in: 4.00

Speed rpm : 1185...1215 4th rack travel in: 1300

rpm : 0.00...1.50Speed

LOW IDLE 1

Setting point w/out bumper spring

: 300 rom

Rack travel in mm: 5.9

Testing:

Speed : 200 man Minimum rack trave: 7.70

Speed rpm: 300 Rack travel in mm: 5.60...6.20 Rack travel in mm: 2.00

: 380...420 Speed rom

TORQUE CONTROL

Dimension a mm

2nd speed rpm : 1050

Rack travel in m: 14.90...15.10

3rd speed rpm : 800

Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rpm hPa : 1000 Pressure

Rack travel mm : 14.70...14.90

Measurement

1/min: 600 Speed

1st pressure hPa : 200

Rack travel in m: 10.00...10.20

2nd pressure hPa : 600

Rack travel in m: 13.50...13.70

3rd pressure hPa : 1250

Rack travel in m: 14.80...15.00 \*

4th pressure hPa : 1400

Rack travel in m: 15.20...15.40

5th pressure hPa : -

Rack travel in m: 9.30...9.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800

Speed : 1050 rpm

Del.quantity cm3/: 235.0...238.0 1000 s: (232.0...241.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 1800

Speed rpm : 800 Del.quantity cm3/ : 248.0...252.0 1000 s: (245.0...255.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 135.0...137.0 1000 s: (132.0...140.0)

cm3 : 8.00 Spread

1000 s: (12.0)

**BREAKAWAY** 

ist version

1mm rack travel less than

full load rack tr: 13.90

rpm : 1090...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 9.30...9.60

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.50...5.60 Prestroke mm : MB 9,6 o 2 : (5.45...5.65) Test sheet : 22.01.92 Edition Rack travel in mm : 20.00...21.00 : 27.5.91 Replaces Firing order : 6-3-5-2-4-1 Test oil : ISO-4113 Combination no. : 0 402 646 922 Phasina : 0-60-120-180-240-300 Injection pump Pump designation: PE6P12OA320LS7834 Tolerance + - ° : 0.50 (0.75) EP type number : 0 412 626 841 Governor Time to cyl. no. : 6 Governor design: : RQ30G/1050PA972-2 Governer no. : 0 421 801 556 BASIC SETTING Customer-spec. information 1st speed rpm: 600 : MERCEDES-BENZ Customer Rack travel in mm : 13.70...13.90 : 0M401 LA Engine Del.quantity cm3/: 20.9...21.1 1st version kW : 213.0 : 2100 Rated speed 100 s: (20.6...21.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 300.02nd speed Overflow valve Rack travel in mm: 6.4...7.0 : 1 417 413 025 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Inlet press., bar: 1.50 cm3 : 0.6Spread 100 s: (1.0) Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 105 assembly rpm : 600 Rack travel in mm : 19.20...20.80 Opening : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 600

Aneroid pressure h: 800

: 209.0...211.0 Del.quantity 1000 : (206.0...214.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm : 600 Rack travel in mm: 20.0

: 1 680 750 075

Test Lines

Testing:

1st rack travel in: 13.10

Speed rpm : 1090...1105

2nd rack travel in: 4.00

rpm : 1175...1205 Speed

4th rack travel in: 1300

Speed rom : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rom Rack travel in mm: 6.7

Testing:

Speed rpm : 200

Minimum rack trave: 8.50 : 300 Speed man:

Rack travel in mm : 6.40...7.00

Rack travel in mm : 2.00

Speed : 380...420 rom

TORQUE CONTROL

Dimension a mm

2nd speed rpm : 1050

Rack travel in m: 14.10...14.30

: 800 3rd speed rpm

Rack travel in m: 14.30...14.50

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 man hPa : 800 Pressure

Rack travel mm : 13.70...13.90

Measurement

1/min: 600 Speed

1st pressure hPa : 250

Rack travel in m: 9.90...10.10

2nd pressure hPa : 550 Rack travel in m: 12.50...12.70 3rd pressure hPa : 1100

Rack travel in m: 13.80...14.00 \*

4th pressure hPa : 1250

Rack travel in m: 14.10...14.30

5th pressure hPa : -

Rack travel in m: 9.50...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed

: 1050 rpm

Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800 Del.quantity cm3/: 219.0...223.0 1000 s: (216.0...226.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm: 500
Del.quantity cm3/: 132.0...134.0
1000 s: (129.0...137.0)

Spread cm3 : 8.00

1000 s: (12.0)

#### **BREAKAWAY**

ist version

1mm rack travel less than

full load rack tr: 13.10

rpm : 1090...1105 Speed

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks Prestroke mm : MB 9,6 p Test sheet : 22.01.92 Edition Rack travel in mm : 20.00...21.00 Replaces : 27.5.91 Firing order Test oil : ISO-4113 Combination no. : 3 402 646 924 Phasing Injection pump Pump designation: PE6P120A320LS7837 Tolerance + - ° EP type number : 0 412 626 842 Governor Time to cyl, no. : 6 Governor design. : RG3CO/950PA971-3 : 0 421 801 557 Governer no. BASIC SETTING Customer-spec. information 1st speed Customer : MERCEDES-BENZ Engine : 0M401 LA 1st version kW : 250.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 Cverflow valve : 1 417 413 025 Inlet press., bar: 1.50 Spread Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 1 688 901 105 Speed Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Speed Test Lines : 1 680 750 075

: 8.00x2.50x1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

Rack travel in mm : 14.70...14.90 Del.quantity cm3/: 23.3...23.5 100 s: (23.0...23.8) cm3 : 0.5100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm : 6.3...6.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm: 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 600 Aneroid pressure h: 1000 233.0...235.0 1000 : (230.0...238.0) cm3 : 5.00 Del.quantity Spread 1000 : (9.00) RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm : 20.0

: 5.20...5.30

: 0.50 (0.75)

rpm : 600

: (5.15...5.35)

: 6-3-5-2-4-1

: 0-60-120-180-240-300

Outside diameter

x Wall thickness

per values \_\_\_\_

x Length mm

Testing: 1st rack travel in: 14.50 rpm : 990...1005 Speed 2nd rack travel in: 4.00 : 1065...1095 Speed רוסח 4th rack travel in: 1200 rom : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.6 Testing: Speed : 200 COM Minimum rack trave: 8.20 : 300 Speed rpm Rack travel in mm : 6.30...6.90 Rack travel in mm: 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.40 2nd speed : 950 rom Rask travel in m: 15.50...15.70 : 800 3rd speed rom Rack travel in m: 15.60...15.80 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man

Pressure hPa : 1000 Rack travel mm : 14.70...14.90

Measurement

Speed 1/min: 600

1st pressure hPa : 200

Rack travel in m: 10.00...10.20 2nd pressure hPa : 600

Rack travel in m: 13.50...13.70

3rd pressure hPa : 1250

Rack travel in m: 14.80...15.00 \*

4th pressure hPa : 1450 Rack travel in m: 15.40...15.60

5th pressure hPa : -

Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800 Speed : 950 rpm

Del.quantity cm3/: 251.0...254.0 1000 s: (248.0...257.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: 1800 : 800 Speed man

Del.quantity cm3/: 250.0...254.0 1000 s: (247.0...257.0)

cm3 : 8.00Spread

1000 s: (12.6)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.50

Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 9.30...9.50

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : ME 9,601 : 22.01.92 Edition : 24.4.91 Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 926

Injection pump

Pump designation : PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

Governor design. : RQV300...950PA797-19

: 0 421 813 901 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

: 230.0 1st version kW Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65) Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.3...6.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel nm

2nd speed rpm : 617

: 5.00...5.50 : 780 travel mm

3rd speed rpm

travel mm : 6.10...6.60

: 1009 4th speed rpm

: 8.30...8.80 travel mm

: 1092 5th speed rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1550 Rack travel in m: 15.10...15.30 Speed rpm : 600 Aneroid pressure h: 1100 : 229.0...231.0 Del.quantity 5th pressure hPa : -1000 : (226.0...234.0) : 5.00 Rack travel in m: 10.30...10.60 cm3 Spread 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 240 (260) 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 118...126 1st version Testing: Aneroid pressure h: 1800 1st rack travel in: 13.90 : 950 Speed rpin Speed rpm : 990...1000 Del.quantity cm3/: 234.0...237.0 2nd rack travel in: 4.00 1000 s: (231.0...240.0) : 1090...1120 cm3 : 8.00 Speed rpm Spread 4th rack travel in: 1200 1000 s: (12.0) Speed rpm : 0.00...1.00 Aneroid pressure h: 1800 Speed rpm : 800 Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) LOW IDLE 1 Control Lever position degrees: 82...90 Spread cm3 : 8.00 1000 s: (12.0) Testing: Aneroid pressure h: -Speed : 200 rpm : 500 rpm. Speed Del.quantity cm3/: 132.0...134.0 Minimum rack trave: 8.50 rpm : 300 1000 s: (129.0...137.0) Speed cm3 : 8.00 Rack travel in mm : 6.50...7.10 Spread 1000 s: (12.0) CONSTANT REGULATION rpm : 300...500 Speed BREAKAWAY TORQUE CONTROL Dimension a mm : 0.40 1st version 2nd speed rpm : 950 1mm rack travel less than Rack travel in m: 14.90...15.10 : 800 3rd speed rpm full load rack tr: 13.90 Rack travel in m: 15.30...15.50 rpm : 990...1000 Speed Ameroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/: 210.0...230.0 1st version Setting 1000 s: (206.0...234.0) : 600 Speed rpm Pressure hPa : 1100 Remarks: : 14.70...14.90 Rack travel mm Measurement \* Increase in control-rod travel with 1/min: 600 Speed respect to setting at least 0.1 mm 1st pressure hPa : 300 Rack travel in m: 10.90...11.10 2nd pressure hPa : 700 Rack travel in m: 13.40...13.60

3rd pressure hPa : 1400

Note remarks

Test sheet : MB 9,6 o 3 Edition : 22.01.92 : 30.8.91 Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 929

Injection pump

Pump designation: PE6P120A320LS7834

EP type number : 0 412 626 841

Governor

Governor design. : RQV300...1050PA797

-25

: 0 421 813 924 Governer no.

Customer-spec. information

Custoner : MERCEDES-BEVZ

Engine : 0M401 LA

: 230.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm : (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rom: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.5...7.1 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 100 s: (1.0) Spread

(B) Setting of injection pump with governor

**GUIDE SLEEVE TRAVEL** 1st speed

rpm : 300 travel mm 1.00...1.50

2nd speed rpm : 608

4.80...5.30 travel mm

3rd speed rpm : 820

: 5.90...6.40 rpm : 1108 travel mm

4th speed

travel mm : 8.30...8.80

rpm : 1183 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1 rpm : 1085

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rom : 600 Aneroid pressure h: 1100 Del. quantity : 229.0...231.0 1000 : (226.0...234.0) : 5.00 Spread cm3 1000 : (9.00)RATED SPEED 1st version Control lever position degrees: 120...128 Testing: 1st rack travel in: 13.90 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1175...1205 4th rack travel in: 1300 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 87...92 Testing: Speed rom Minimum rack trave: 8.70 : 300 rpm Rack travel in mm : 0.50...7.10 CONSTANT REGULATION rpm : 300...450 Speed TURBUE CONTROL Dimension a mm : 0.40 nd speed rpm : 1050 Rack travel in m: 14.90...15.10 2nd speed 3rd speed rpm : 800 Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 1100 Rack travel mm : 14.70...14.90 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.50...10.70 2nd pressure hPa : 700 Rack travel in m: 13.40...13.60

3rd pressure hPa : 1400 Rack travel in m: 14.90...15.00 4th pressure hPa : 1550 Rack travel in m: 15.10...15.30 5th pressure hPa : Rack travel in m: 10.00...10.30 START CUT-OUT Speed 1/min: 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800 Speed : 1050 rpm Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1800 Speed : 800 rom Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 Spr ead 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.001000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.90 npm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0) Remarks:

Note remarks

Test sheet : ME 9,604 : 24.01.92 : 26.4.91 Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 930

Injection pump

Pump designation : PE6P12OA32OLS7834 EP type number : 0 412 626 841

Governor

Governor design. : R0300/1050PA972-7 : 0 421 801 583 Governer no.

Customer-spec, information

: MERCEDES-BENZ Customer

: 0M401 LA Engine

1st version kW : 230.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Cvertion

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.5...7.1 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1100

: 229.0...231.0 Del.quantity 1000 : (226.0...234.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point: Speed rpm

Rack travel in mm: 20.0

Testing: 1st rack travel in: 13.90 Speed rom : 1090...1105 2nd rack travel in: 4.00 Speed : 1180...1210 rpm 4th rack travel in: 1300 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.8 Testing: Speed rpm : 200 Minimum rack trave: 8.70 : 300 rpm Rack travel in mm : 6.50...7.10 Rack travel in mm : 2.00 : 380...420 Speed חכיי TORQUE CONTROL Dimension a mm : 0.35 nd speed rpm : 1050 Rack travel in m: 14.90...15.10 2nd speed 3rd speed rpm : 800 Rack travel in m: 15.30...15.50 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom hPa : 1100 Pressure Rack travel mm : 14.70...14.90 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.90...11.10 2nd pressure hPa : 700 Rack travel in m: 13.40...13.60 3rd pressure hPa : 1400 Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1550 Rack travel in m: 15.10...15.30 5th pressure hPa : -

Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: 1800 Speed : 800 rpm Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.90 Speed rpm : 1090...1105 STARTING FUEL DELIVERY Speed rpm : 100 Rack travel in mm : 10.00...10.30 Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

Aneroid pressure h: 1800 Speed rpm : 1050

Rack travel in m: 10.00...10.30

FUEL DELIVERY CHARACTERISTICS

Note remarks

: NB 9,6 r 1 : 22.01.92 : 28.6.91 Test sheet Edition Replaces : ISO-4113 Test oil

Compination no. : 0 402 646 939

Injection pump

Pump designation : PE6P120A320LS7836 : 0 412 626 840 EP type number

Governor

Governor design. : RQV300...950PA797-31

: 0 421 813 922 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 200.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. ro. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 5.2...5.8 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm rpm : 617 2nd speed

: 5.00...5.50 rpm : 780 travel mm

3rd speed

: 6.10...6.60 travel mm

rpm : 1009 4th speed

: 8.30...8.80 travel mm

5th speed : 1092 rpm : 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1

rpm : 1020 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Speed rpm : 600 Aneroid pressure h: 800 : 182.0...184.0 Del. quantity 1000 : (179.0...187.0) : 5.00 Spread cm3 10000 : (9.00)RATED SPEED 1st version Control lever position degrees: 118...126 Testina: 1st rack travel in: 12.10 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1075...1105 Speed 4th rack travel in: 1200 Speed rcm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rom : 200 Minimum rack trave: 7.30 rpm : 300 Rack travel in m : 5.20...5.80 CONSTANT REGULATION Speed rpm : 300...450 TORQUE CONTROL Dimension a mm : 950 2nd speed rpm Rack travel in m: 13.10...13.30 : 800 3rd speed rom Rack travel in m: 13.10...13.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 800 Pressure : 12.40...12.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.20...10.40 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000

Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -Rack travel in m: 9.80...10.10 START CUT-OUT Speed 1/min: 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rpm : 950 Speed Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1400 : 300 Speed rpm Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) Remarks:

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : MB 9,6 q 1 : 22.01.92 : 26.7.91 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 646 940 Phasing Injection pump Pump designation: PE6P120A320LS7836 EP type number : 0 412 626 840 Governor Governor design. : RQ300/950PA971-7 : 0 421 801 580 Governer no. Customer-spec. information Customer : MERCEDES-BENZ **Engine** : 0M407 LA 1st version kW : 200.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Spread Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 1 688 901 105 Speed Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Speed

: 1 680 750 075

: 8.00X2.50X1000

Prestroke mm : 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. BASIC SETTING 1st speed rpm: 600 Rack travel in mm : 12.40...12.60 Del.quantity cm3/: 18.2...18.4 100 s: (17.9...18.7) cm3 : 0.5100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm: 5.3...5.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 600 Aneroid pressure h: 800 : 182.0...184.0 Del.quantity 1000 : (179.0...187.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Setting point: Speed : 600 rom Rack travel in mm : 20.0

Test lines

x Length rim

Outside diameter x Wall thickness

per values

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

Testing: 1st rack travel in: 12.10 rpm : 990...1005 Speed 2nd rack travel in: 4.00 : 1065...1095 Speed rpm 4th rack travel in: 1200 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rom Rack travel in mm: 5.6 Testing: Speed rpm : 200 Minimum rack trave: 7.40 Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00 Speed rpm : 370...410 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 800 Pressure Rack travel mm : 12.40...12.60 Measurement 1/min: 600 Speed 1st pressure hPa : 500 Rack travel in m: 11.60...11.80 2nd pressure hPa : 1000 Rack travel in m: 12.60...12.80 3rd pressure hPa : 1150 Rack travel in m: 12.90...13.10 4th pressure hPa : -Rack travel in m: 10.30...10.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm : 950 Del.quantity cm3/ : 203.0...206.0 1000 s: (200.0...209.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1400 : 800 Speed rpm Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0) cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/ : 132.0...134.0
1000 s: (129.0...137.0)
Spread cm3 : 8.00
1000 s: (12.0)

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 10.30...10.60

Remarks:

E16

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks Prestroke mm : 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1 : MB 9,6 s Test sheet Edition : 22.01.92 Replaces : 21.6.91 Test oil : ISO-4113 Combination no. : 0 402 646 950 Phasina : 0-60-120-180-240-300 Injection pump Pump designation : PE6P120A320LS7837 Tolerance + - ° : 0.50 (0.75) EP type number : 0 412 626 842 Governor Time to cyl. no. Governor design: RQ300/950PA993-2 : 0 421 801 590 Governer no. BASIC SETTING Customer-spec, information 1st speed rpm: 600 Customer : MERCEDES-BENZ Rack travel in mm : 14.70...14.90 : 0M441 LA Engine Del.quantity cm3/: 23.3...23.5 1st version kW : 250.0 Rated speed : 1900 100 s: (23.0...23.8) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 300.02nd speed Overflow valve Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) : 1 417 413 025 cm3 : 0.6 Inlet press., bar: 1.50 Spread 100 s: (1.0) Welflavü quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 105 rpm : 600 assembly Speed Rack travel in mm : 19.20...20.80 Openina . pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 600 Aneroid pressure h: 1000 : 233.0...235.0 Del.quantity 1000 : (230.0...238.0) Test lines : 1 680 750 075 : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness x Length mm : 8.00x2.50x1000 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses

Setting point:

Speed

: 600

rom Rack travel in mm: 20.0

Set equal delivery quant.

per values

Testina: 1st rack travel in: 14.70 Speed rpm : 990...1005 2nd rack travel in: 4.00 Speed : 1065...1095 rpm 4th rack travel in: 1200 rom : 0.00...1.50Speed LOW ICLE ! Setting point w/out bumper spring rpm Rack travel in mm: 6.5 Testina: Speed rpm : 200 Minimum rack trave: 8.30 Speed rpm : 300 Rack travel in mm: 6.20...6.80
Rack travel in mm: 2.00
Speed rpm: 3SO...420 Aneroid/Altitude Compensator Test 1st version Settina Speed : 600 rom hPa : 1000 Pressure Rack travel nm : 14.70...14.90 Measurement. Speed 1/min: 600 1st pressure hPa : 200 Rack travel in m: 9.80...10.00 2nd pressure hPa : 600 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1250 Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1450 Rack travel in m: 15.10...15.30 5th pressure hPa : -Rack travel in m: 9.50...9.70 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1800 Speed rpm: 950
Del.quantity cm3/: 251.0...254.0
1000 s: (248.0...257.0) Spread cm3 : 8.00 1000 s: (12.0)

### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.70 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm:: 100 Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 9,6 q 6 : 22.01.92 : 8.10.91 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 646 952

Injection pump

Pump designation : PE6P120A320LS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQ300/1050PA972-8 : 0 421 801 626 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M401 LA Engine

: 180.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm : (5.45...5.65)
Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 11.70...11.90

Del.guantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 5.3...5.9
Del.quantity cm3/: 1.6...2.2
100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

Speed rpm : 600 Rack travel in mn: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 700

Del.quantity : 164.0...166.0 1000 : (161.0...169.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm : 20.0

Testing: 1st rack travel in: 11.30 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 mom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 5.6 Testina: Speed : 200 rpm Minimum rack trave: 7.40 Speed rpm : 300
Rack travel in mm : 5.30...5.90
Rack travel in mm : 2.00 : 370...410 Speed rom Aneroid/Altitude Compensator Test 1st version Settina Speed : 600 MCT Pressure hPa : 700 Rack travel mm : 11.70...11.90 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.20...10.40 2nd pressure hPa : 400 Rack travel in m: 11.10...11.30 3rd pressure hPa : 900 Rack travel in m: 11.80...12.00 \* 4th pressure hPa : -Rack travel in m: 10.10...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 1050 Speed rpm Del.quantity cm3/: 182.0...185.0 1000 s: (179.0...188.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1400 Speed rpm : 800 Del.quantity cm3/ : 186.0...190.0 1000 s: (183.0...193.0)

cm3 : 8.00 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.30 Speed rpm : 1000...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 10.10...10.40

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Spread

Note remarks

: MB 9,6 q 3 : 22.01.92 Test sheet Edition

: 5.7.91 Replaces : ISO-4113 Test oil

: 0 402 646 953 Combination no.

Injection pump

Pump designation: PE6P120A320LS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQ300/950PA971-8 : 0 421 801 625 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 180.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke m

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 11.70...11.90

Del.guantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

cm2 : 0.5 Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.3...5.9

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 700

: 164.0...166.0 Del.quantity 1000 : (161.0...169.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point: rpm : 600 Speed Rack travel in mm: 20.0

Testina: 1st rack travel in: 11.50 rpm : 990...1005 Speed! 2nd rack travel in: 4.00 : 1065...1095 Speed rpn 4th rack travel in: 1100 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.6 Testina: Speed rpm Minimum rack trave: 7.40 : 300 Speed rpm Rack travel in mm : 5.30...5.90 Rack travel in mm : 2.00 Speed : 370...410 man Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm Pressure hPa : 700 Rack travel mm : 11.70...11.90 Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 10.20...10.40 2nd pressure hPa : 400 Rack travel in m: 11.10...11.30 3rd pressure hPa : 900 Rack travel in m: 11.80...12.00 \* 4th pressure hPa : 1100 Rack travel in m: 12.20...12.40 5th pressure hPa : -Rack travel in m: 10.10...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 950 Speed L/DW Del.quantity cm3/: 187.0...190.0 1000 s: (184.0...193.0) Spread cm3 : 8.00

1000 s: (12.0)

1000 s: (187.0...197.0)

Speed rpm : 800 Del.quantity cm3/: 190.0...194.0

Aneroid pressure h: 1400

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0)

### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.50 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 10.10...10.40

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 9,6 o 6 : 22.01.92 : 29.11.91 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 646 954 Injection pump Pump designation: PE6P12OA32OLS7834 EP type number : 0 412 626 841 Covernor Governor design. : RQ300/1050PA993-5 : 0 421 801 610 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M401 LA 1st version kW : 213.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 1 688 901 105 Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,8

Test Lines : 1 680 750 075 Outside diameter x Wall thickness : 8.00x2.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 5.50...5.60 Prestroke and : (5.45...5.65) Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - \* : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rom: 600 Rack travel in mm : 13.70...13.90 Del.quantity cm3/: 20.9...21.1 100 s: (20.6...21.4) Spread cm3 : 0.5100 s: (0.9) ron: : 300.0 2nd\_speed\_ Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6 100 s: (1.0) Spread GUIDE SLEEVE POSITION Control-lever position Dearee: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600 Aneroid pressure h: 800 : 209.0...211.0 Del.quantity 1000 : (206.0...214.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Setting point: Speed rpm : 600 Rack travel in mm: 20.0

Testina: 1st rack travel in: 13.00 rpm : 1090...1105 Sceed 2nd rack travel in: 4.00 : 1175...1205 Speed man 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rom Rack travel in mm: 6.2 Testing: Speed rom Minimum rack trave: 7.50 : 300 Speed man Rack travel in mm : 5.90...6.50 Rack travel in mm : 2.00 Speed rpm : 380...420 TORQUE CONTROL Dimension a mm : 1050 2nd speed MON Rack travel in m: 14.00...14.20 : 800 3rd speed rpm Rack travel in m: 14.10...14.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 ווכרו hPa : 800 Pressure Rack travel mm : 13.70...13.90 Measurement Speed  $1/\min : 600$ 1st pressure hPa : 250 Rack travel in m: 9.90...10.10 2nd pressure hPa : 550 Rack travel in m: 12.50...12.70 3rd pressure hPa : 1100 Rack travel in m: 13.80...14.00 \* 4th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

: 1050 Speed riom Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0) cm3 : 8.00 bsence 1000 s: (12.0) Aneroid pressure h: 1500 Speed rpm: 800 Del.quantity cm3/: 219.0...223.0 1000 s: (216.0...226.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00Spread 1000 s: (12.0)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm:: 100 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

1st version

Aneroid pressure h: 1500

Note remarks

: MB 9.6 r 2 : 22.01.92 : 30.8.91 Test sheet Edition Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 957

Injection pump

Pump designation : PE6P120A320LS7836 EP type number : 0 412 626 840

Governor

Governor design. : RQV300...1050PA797

-32

: 0 421 813 957 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M481 LA Engine

1st version kW : 180.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)
Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing **: 0-60-120-180-240-300** 

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 11.70...11.90

Del.quantity cm3/: 16.4...16.6

100 s: (16.1...16.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 5.3...5.9
Del.quantity cm3/: 1.6...2.2
100 s: (1.3...2.5)

cm3 : 0.6 100 s: (1.0) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 0.50...1.00

2nd speed : 830 rpm

: 5.90...6.40 rpm : 1107 travel mm

3rd speed

: 8.10...8.60 rpm : 1190 travel mm

4th speed

travel mm : 9.80...10.30

rpm : 1290 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Arieroid pressure h: 700 : 164.0...166.0 Del.quantity 1000 : (161.0...169.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 11.30 Speed riom : 1090...1100 2nd rack travel in: 4.00 rpm : 1165... 1195 Speed 4th rack travel in: 1300 npm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 78...86 Testing: Speed : 200 rom Minimum rack trave: 7.40 mc,n : 300 Rack travel in mm : 5.30...5.90 CONSTANT REGULATION mpm : 300...400 Speed Ameroid/Altitude Compensator Test 1st version Settina Speed rpm : 600 Pressure hPa : 700 Rack travel mm : 11.70...11.90 Measurement 1/min : 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.30...10.50 2nd pressure hPa : 400 Rack travel in m: 11.10...11.30 3rd pressure hPa : 900
Rack travel in m: 11.80...12.00 \*
4th pressure hPa : 1100 Rack travel in m: 12.10...12.30 5th pressure hPa : -Rack travel in m: 10.30...10.60

START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm : 1050 Del.quantity cm3/: 182.0...185.0 1000 s: (179.0...188.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 Speed rpm : 800 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1090...1103 Spead STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 9,6 r 3 : 22.01.92 Test sheet Edition : 30.8.91 Replaces : ISO-4113 Test oil : 0 402 646 958 Combination no. Injection pump Pump designation : PE6P12OA32OLS7836 : 0 412 626 840 EP type number Governor Governor design.: RQV300...950PA797-33 Governer no. : 0 421 813 958 Customer-spec, information : MERCEDES-BENZ Customer Engine : 0M401 LA : 180.0 1st version kW : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 105 assembly Opening | : 207...210 pressure, bar

Orifice plate diameter mm : 0.8 : 1 680 750 075 Test Lines Outside diameter x Wall thickness : 8.00x2.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 5.50...5.60 Prestroke mm : (5.45...5.65) Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING rpm: 600 1st speed Rack travel in mm : 11.70...11.90 Del.quantity cm3/: 16.4...16.6 100 s: (16.1...16.9) Spread cm3 : 0.5100 s: (0.9) rpm : 300.0 2rid speed Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6Spread 100 s: (1.0) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.00...1.50 travel mm 2nd speed rpm : 780 : 6.10...6.60 travel mm rpm : 1008 3rd speed : 8.30...8.80 travel mm rpm : 1092 4th speed : 11.00...10.30 travel mm rpm : 1190 5th speed : 11.00...12.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1020 Speed

Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP

per values \_\_\_\_

1st version Speed rpm : 600 Aneroid pressure h: 700 Del. quantity : 164.0...165.0 1000 : (161.0...169.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 114...122 Testina: 1st rack travel in: 11.50 rpm : 990...1000 Speed 2nd rack travel in: 4.00 : 1065. .1095 Speed rpm 4th rack travel in: 1200 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 78...86 Testing: Speed rom. : 200 Minimum rack trave: 7.40 man : 300 Rack travel in mm : 5.30...5.90 CONSTANT REGULATION Speed rpm : 300...450 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 Pressure hPa : 700 : 11.70...11.90 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.30...10.50 2nd pressure hPa : 400 Rack travel in m: 11.10...11.30 3rd pressure hPa : 900 Rack travel in m: 11.80...12.00 \* 4th pressure hPa : 1100 Rack travel in m: 12.10...12.30 5th pressure hPa : Rack travel in m: 10.30...10.60

1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 Speed rpm : 950 Del.quantity cm3/: 187.0...190.0 1000 s: (184.0...193.0) Spread : 8.00 cm31000 s: (12.0) Aneroid pressure h: 1400 Speed : 300 PON Del.quantity cm3/: 189.0...193.0 1000 s: (186.0...196.0) Spread cm3 : 8.00 1000 s: (12.0) Ameroid pressure h: -Speed rpin Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version immi rack travel less than

full load rack tr: 11.50 Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

START CUT-OUT

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : MB 9,6 q 4 : 22.01.92 Test sheet Edition Replaces : 30.8.91 : ISO-4113 Test oil Combination no. : 0 402 646 959 Injection pump Pump designation : PE6P120A320LS7836 EP type number : 0 412 626 840 Governor Governor design. : RQ300/1050PA993-6 Governer no. : 0 421 801 616 Customer-spec. information Customer : MERCEDES-BENZ Engine : 0M401 LA 1st version kW : 200.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 105 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 075

: 8.00X1.50X1000

: 5.50...5.60 Prestroke mm : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1 : 0-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 600 Rack travel in mm: 12.40...12.60 Del.quantity cm3/: 18.2...18.4 100 s: (17.9...18.7) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 300.0 Rack travel in mm : 5.5...5.8 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5) Spread cm3 : 0.6100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Speed Rack travel in mm: 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600 Aneroid pressure h: 800 Del.quantity : 182.0...184.0 1000 : (179.0...187.0) Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Setting point: Rack travel in mm : 20.0

Outside diameter

x Wall thickness

per values \_\_\_\_

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

x Length mm

Testing: 1st rack travel in: 12.10 Speed rpm : 1090...1105 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.6 Testina: rpm : 200 Speed Minimum rack trave: 7.50 : 300 Speed rom Rack travel in mm : 5.50...5.80 Rack travel in mm : 2.00 : 380...420 Speed rom Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 hPa : 800 Pressure : 12.40...12.60 Rack travel mm Measurement Speed  $1/\min : 600$ 1st pressure hPa : 250 Rack travel in m: 10.20...10.40 2nd pressure hPa : 500 Rack travel in m: 11.60...11.80 3rd pressure hPa : 1000 Rack travel in m: 12.60...12.80 4th pressure hPa : 1150 Rack travel in m: 12.90...13.10 5th pressure hPa : -Rack travel in m: 9.80...10.10 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rpm : 1050 Del.quantity cm3/: 201.0...204.0 1000 s: (198.0...207.0) cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 1400

Speed rpm: 800

Del.quantity cm3/: 202.0...206.0

1000 s: (199.0...209.0)

Spread cm3: 8.00

1000 s: (12.0)

Aneroid pressure h: 
Speed rpm: 500

Del.quantity cm3/: 132.0...134.0

1000 s: (129.0...137.0)

Spread cm3: 8.00

1000 s: (12.0)

#### BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

.

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks Prestroke mm : ME 9,6 a 8 : 22.01.92 Test sheet Edition Replaces Firing order Test oil : ISO-4113 Combination no. : 0 402 646 960 Phasing Injection pump Pump designation: PE6P120A320LS7836-10 Tolerance + - ° EP type number : 0 412 626 854 Governor Time to cyl. no. Governor design. : RQ300/950PA993-7 Governer no. : 0 421 801 617 BASIC SETTING Customer-spec. information 1st speed Customer : MERCEDES-BENZ Engine : 0M401 LA 1st version kW : 200.0 : 1900 Rated speed TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 2nd speed Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Spread Overflow quantity min. 1/h: 100...120 Test nozzle holder assembly : 1 688 901 105 Speed Opening : 207...210 pressure, bar Orifice plate 1st version diameter mm : 0,8 Speed

: 1 680 750 075

: 8.00x2.50x1000

: 5.50...5.60 : (5.45...5.65) Rack travel in mm : 20.00...21.00 : 6-3-5-2-4-1 : 0-60-120-180-240-300 : 0.50 (0.75) : 6 rpm: 600 Rack travel in mm : 12.40...12.60 Del.quantity cm3/: 18.2...18.4 100 s: (17.9...18.7) cm3 : 0.5100 s: (0.9) rpm : 300.0Rack travel in mm: 5.3...5.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 600 Aneroid pressure h: 800 Del.quantity : 182.0...184.0 1000 : (179.0...187.0) cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Setting point: Speed rpm : 600 Rack travel in mm: 20.0

Test lines

x Length mm

Outside diameter

x Wall thickness

per values

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

Testing: 1st rack travel in: 12.10 rpm : 990...1005 Speed 2nd rack travel in: 4.00 Speed : 1065...1095 rom 4th rack travel in: 1200 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.6 Testina: Speed MCT Minimum rack trave: 7.40 Speed : 300 rom Rack travel in mm : 5.30...5.90 Rack travel in mm : 2.00 : 370...410 Speed rem Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 800 Pressure : 12.40...12.80 Rack travel mm Measurement Speed  $1/\min : 600$ 1st pressure hPa : 500 Rack travel in m: 11.60...11.80 2nd pressure hPa : 1050 Rack travel in m: 12.60...12.80 3rd pressure hPa : 1150 Rack travel in m: 12.90...13.10 4th pressure hPa : -Rack travel in m: 10.30...10.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 : 950 rpm Del.quantity cm3/: 203.0...206.0 1000 s: (200.0...209.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1400 Speed : 800 rpm

Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure n: -Speed rpm : 500 Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.00

1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

F04

Note remarks

Test sheet : DAF 11,7 L3 : 22.01.92 : 22.11.91 Edition

Replaces Test oil : ISO-4113

Combination no. : 0 402 646 963

Injection pump

Pump designation : PE6P12DA32ORS7218Y

EP type number : 0 412 626 859

Governor

Governor design. : RQ250/1000PA936-1

: 0 421 801 508 Governer no.

Customer-spec, information Customer : DAF

Engine : WS 242 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X600

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40

: (5.25...5.45) Rack travel in mm : 13.70...14.70

F05

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference \* CS : 2.25...3.75

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 21.3...21.5

100 s: (21.0...21.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.02nd speed Rack travel in mm : 6.6...7.0

Del.quantity cm3/ : 2.4...3.0

100 s: (2.1...3.3)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 550 Speed

Rack travel in mm : 15.80...17.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed Speed rpm: 850 Aneroid pressure h: 1000

Del.quantity : 213.0...218.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point: Speed rpm

: 550 Rack travel in mm: 16.4 Testina:

1st rack travel in: 13.30

rpm : 1035...1050 Speed

End rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

rpm : 0.00...1.40Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 rpm : 250 Speed

Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 15.30...15.40

2nd speed rpm : 1000

Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version Setting

Speed rigri : 600 hPa : 1000 Pressure

: 14.30...14.40 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 420

Rack travel in m: 13.80...13.90

3rd pressure hPa : 310

Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 159.0...161.0 1000 s: (156.0...164.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 1035...1050 Speed

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Prestroke mm : 5.30...5.40 : (5.25...5.45) Rack travel in mm : 13.70...14.70 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : DAF 11,7 L7 : 22.01.92 Test sheet Edition : 22.11.91 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 0 402 646 963T3 Tolerance + - \* : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation: PE6P120A320RS7218Y EP type number : 0 412 626 859 BEGINNING OF DELIVERY DIFFERENCE Governor Governor design. : RQ250/1000PA936-1 betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75 : 0 421 801 508 Governer no. Cust, part no. : T3 BASIC SETTING Customer-spec. information Customer : DAF 1st speed rpm: 850 Engine : WS 242 G Rack travel in mm : 14.30...14.40 TEST BENCH REQUIREMENTS Del.quantity cm3/: 21.5...21.7 Test oil 100 s: (21.2...22.0) inlet temp. °C : 38...42 cm3 : 0.5Spread Overflow valve : 1 417 413 025 100 s: (0.9) Inlet press., bar: 1.50 2nd speed rpm : 250.0 Rack travel in mm : 6.6...7.0 Del.quantity cm3/ : 1.4...2.0 Test nozzle holder 100 s: (1.1...2.3) : 1 688 901 019 assembly cm3 : 0.8Spread 100 s: (1.2) Opening. : 207...210 pressure, bar GUIDE SLEEVE POSITION Orifice plate Control-lever position diameter mm : 0,8 Degree: -1 rpm : 550 Speed Rack travel in mm : 15.80...17.00 Test Lines : 1 680 750 075 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter x Wall thickness 1st version x Length mm : 8.00x2.50x1000 Speed rpm : 850 Aneroid pressure h: 1000 (A) Injection pump setting values : 215.0...217.0 Del.quantity 1000 : (212.0...220.0) Insp. values in parentheses : 5.00 Set equal delivery quant. Spread cm3 per values \_\_\_ 1000 : (9.00) BEGINNING OF DELIVERY RATED SPEED

1st version

Test pressure, bar: 25...27

Setting point:

: 550 Speed rpm Rack travel in mm: 16.4

Testing:

1st rack travel in: 13.30

rpm : 1035...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

Speed rigm : 0.00...1.40

LOW IDLE 1

Setting point w/out bumper spring

rpm : 250 Rack travel in mm: 5.0

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 rpm : 250

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00

Speed : 310...350 rom

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

1st speed rpm : 850
Rack travel in m: 15.30...15.40
2nd speed rpm : 1000
Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Settina

rpm : 600 hPa : 1000 Speed rpm Pressure

: 14.30...14.40 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 420

Rack travel in m: 13.80...13.90
3rd pressure hPa : 310
Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 167.0...169.0

1000 s: (164.0...172.0)

EREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

rpm : 1035...1050 Speed

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: DAF 11,7 L4 Test sheet

Edition : 22.01.92 : 22.11.91 Replaces

Test oil : ISO-4113

Combination no. : 9 402 545 964

Injection pump

Pump designation : PE6P12DA32DRS7218Y

: 0 412 626 859 EP type number

Governor

Governor design. : RQV250...1000PA9/39

Governer no. : 0 421 813 829

Customer-spec. information Customer : DAF

Engine : WS 242 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.30...5.40 Prestroke mm

: (5.25...5.45) Rack travel in nm : 13.70...14.70

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference \* CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 21.3...21.5

100 s: (21.0...21.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : 6.6...7.0 Del.quantity cm3/ : 2.4...3.0

100 s: (2.1...3.3)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

: 7.80...8.00 travel mm

rpm : 250 2nd speed

travel mm : 0.70...1.10

3rd speed rpm : 400

travel mm 2.50...3.10

: 700 4th speed rpm

: 4.50...4.90 : 1350 travel mm

5th speed rpm

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000

Del. quantity : 213.0...218.0)

cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 13.30

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm: 1150...1180 4th rack travel in: 1250

rpm : 0.00...1.40Speed

LOW IDLE 1

Control lever

position degrees: 77...85

Testing:

Speed rpm Minimum rack trave: 6.50 rpm : 250

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 270...380

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm Pressure hPa : 1000

: 14.30...14.40 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 420

Rack travel in m: 13.80...13.90

3rd pressure hPa : 310

Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

: 600 Speed rpm

F10

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 159.0...161.0 1000 s: (156.0...164.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.30

rpm : 1040...1050 Speed

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

: DAF 11.7 L8 : 22.01.92 : 22.11.91 lest sheet Edition Replaces : ISO-4113 Test oil

: 0 402 646 964 Combination no.

Injection pump

Pump designation : PE6P120A320RS7218Y : 0 412 626 859 EP type number

Governor

Governor design. : RQVZ50...1000PA939 Governer no. : 0 421 813 829

Cust. part no. : 13

Customer-spec. information Customer : DAF

: WS 242 G Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.30...5.40 Prestroke mm

: (5.25...5.45)
Rack travel in mm : 13.70...14.70
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 14.30...14.40

Deliquantity cm3/: 21.5...21.7

100 s: (21.2...22.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.6...7.0 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

: 7.80...8.00 travel mm rpm : 250 2nd speed

travel mm

: 0.70...1.10 3rd speed rpm : 400

: 2.50...3.10 travel mm

4th speed rpm : 700

: 4.50...4.90 travel mm : 1350 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000

: 215.0...217.0 Del.quantity 1000 : (212.0...220.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 13.30 Speed rpm : 1040...1050

2nd rack travel in: 4.00

Speed rpm : 1150...1180

4th rack travel in: 1250

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 77...85

Testina:

Speed : 100 ripm Minimum rack trave: 6.50 : 250 Speed rom

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 270...380 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 600 rpm Pressure

hPa : 1000 mm : 14.30...14.40 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa, : 420

Rack travel in m: 13.80...13.90 3rd pressure hPa : 310 Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rom : 600 Speed

Del.quantity cm3/: 167.0...169.0

1000 s: (164.0...172.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.30

rpm : 10/40...1050 Speed

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : NB 9,6 0 8 : 22.01.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 965

Injection pump

Pump designation : PE6P120A320LS7834-1

EP type number : 0 412 626 857

Governor

Governor design. : RQV350...1050PA866

-19

: 0 421 813 979 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M401 LA, Euro 1

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm : (5.45...5.55)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 5.4...6.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 1.30...1.80 rpm : 570 travel mm

2nd speed

: 3.30...3.80 travel mm

3rd speed rpm : 900

travel mm : 5.40...5.90

rpm : 1107 4th speed

travel mm : 7.80...8.30

: 1204 5th speed rpm

: 9.30...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Speed

Degree: -1

rpm : 1125

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900

: 207.0...209.0 Del.cuantity

1000 : (204.0...212.0)

: 5.00 Spread cm31000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 13.80 Speed rom : 1090...1100

2nd rack travel in: 4.00

: 1180...1210 Speed man

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 53...71

Testing:

Speed man Minimum rack trave: 7.60 rpm

Rack travel in mm : 5.40...6.00

CONSTANT REGULATION

: 350...600 Speed rom

Ameroic/Altitude Compensator Test

1st version Settina

: 600 Speed rpm Pressure hPa : 900

: 14.10...14.30 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : 300

Rack travel in m: 10.90...11.10

2nd pressure hPa : 500

Rack travel in m: 12.80...13.00

3rd pressure hPa : 1350

Rack travel in m: 14.40...14.60

4th pressure hPa :

Rack travel in m: 9.80...10.10

START CUT-OUT

1/min : 270 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1600

Speed rpm : 1050 Del.quantity cm3/: 225.0...228.0 1000 s: (222.0...231.0)

cm3 : 8.00 1000 s: (12.0) Spread

Aneroid pressure h: 1600

: 800 Speed rpm

Del.quantity cm3/: 226.0...230.0 1000 s: (223.0...233.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h:

: 500 Speed rpm

Del.quaritity cm3/: 123.0...125.0

1000 s: (120.0...128.0)

cm3 : 8.00 Spread

1000 s: (12.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.80

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 240.0...260.0

1000 s: (236.0...264.0)

Remarks:

Note remarks

: MB 9,6 r 5 : 18.12.91 Test sheet Edition

Replaces Test oil

: ISO-4113

Combination no. : 0 402 646 966

Injection pump

Pump designation: PE6P12OA32OLS7836-1

EP type number : 0 412 626 860

Governor

Governor design. : ROV350...1050PA866

-20

Governer no. : 0 421 813 980

Customer-spec. information

**Customer** : MERCEDES-BENZ

Engine : 0M401 LA, Euro 1

1st version kW : 200.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.55)
Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rbm: 600

Rack travel in mm : 12.40...12.60

Del.quantity cm3/: 18.2...18.4

100 s: (17.9...18.7)

Spread cm3 : 0.5

100 s: (0.9)

cpm : 350.0 2nd speed

Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

1.30...1.80 travel mm rpm : 570 2nd speed

: 3.30...3.80 rpm : 900 travel mm

3rd speed

Spread

: 5.40...5.90 travel mm

rpm : 1107 4th speed

: 7.80...8.30 travel mm

5th speed : 1204 rpm

travel mm : 9.80...10.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1125

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 800

Dal.quantity : 182.0...184.0

1000 : (179.0...187.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 12.10 rpm : 1090...1100

Speed

2nd rack travel in: 4.00

: 1180...1210 Speed rom

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 63...71

Testina:

Speed rom Minimum rack trave: 7.30 rpm

Rack travel in mm : 5.10...5.70

CONSTANT REGULATION

rpm : 350...600 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed man hPa : 800 Pressure

Rack travel mm : 12.40...12.60

Measurement

1/min: 600 Speed

1st pressure hPa : 200

Rack travel in m: 11.30...11.50

2nd pressure hPa : 1000

Rack travel in m: 12.60...12.80

3rd pressure hPa

Rack travel in m: 10.10...10.40

START CUT-OUT

Speed 1/min: 270 (290) FUEL DELIVERY CHARACTERISTICS

1st version

Anaroid pressure h: 1500 : 1050 Speed man

Speed rpm : 1030
Del.quantity cm3/: 201.0...204.0
1000 s: (198.0...207.0)
Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: 1600

Speed : 800 rom

Del.quantity cm3/: 202.0...206.0

1000 s: (199.0...209.0)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0)

cm3 : 8.00 Spread 1000 s: (12.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

Note remarks

Test sheet : PEN 16,2 b3 Edition : 24.01.92

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 967

Injection pump

Pump designation : PE6P130A720RS7150

EP type number : 0 412 636 808

Covernor

Governor design. : RQV250...900PA881-1

: 0 421 813 982 Governer no.

Customer-spec. information Customer : PENTA

Engine : TAMD 162 A

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 922 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Cpening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 33.4...33.7

100 s: (33.1...34.1)

cm3 : 0.6 Spread

100 s: (1.0)

2nd speed rpm : 250.0

Rack travel in mm: 3.7...3.9

Del.quantity cm3/: 1.7...2.2

100 s: (1.4...2.4)

Spread cm3 : 0.5

100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 0.90...1.30 travel mm

rpm : 350 : 2.00...2.60 2nd speed travel mm

rpm : 700 3rd speed

: 4.50...5.10 travel mm

: 925 4th speed (\*DH

: 7.60...7.80 travel mm

rpm : 985 5th speed

travel mm : 8.40...8.80

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 980

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1000 Del.quantity : 354.5...341.0)

Spread

cm3 : 6.00

1000 : (10.00)

PATED SPEED

1st version

Control lever

position degrees: 114...122

Testinu:

1st rack travel in: 10.00 Speed rpm: 925...935 2nd rack travel in: 4.00

rpm : 975...1005 Speed

4th rack travel in: 1100

rom : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position dearees: 63...71

Testina:

Speed rpm : 100

Minimum rack trave: 5.30

: 250 man

Rack travel in mm: 3.70...3.90

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed mqn.

hPa : 1000 Pressure

Rack travel mm : 11.00...11.10

Measurement

Speed 1/min : 500

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 675

Rack travel in m: 10.70...10.80

3rd pressure hPa : 400

Rack travel in m: 9.10...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 700 Del.quantity cm3/: 226.5...229.5 1000 s: (223.0...233.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 925...935 Speed

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.70...3.90
Del.quantity cm3/: 17.0...22.0

1000 s: (14.5...24.5)

Spread

cm3 : 5.00 1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 rm.

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.50...5.60 : (5.45...5.65) Prestroke mm : MB 12,8 o : 24.01.92 : 27.9.91 Test sheet Edition Rack travel in mm : 20.00...21.00 Replaces : 8- 7- 2- 6- 3- 5-Firing order Test oil : ISO-4113 Combination no. : 0 402 648 893 Injection pump : 0-45-90-135-180-225-Phasina Pump designation : PE8P120A320LS7835 270-315 Tolerance + - ° EP type number : 0 412 628 847 : 0.50 (0.75) Severnor Governor design. : RQ300/950PA971-2 Time to cyl. no. : 8 Governer no. : 0 421 801 548 BASIC SETTING Customer-spec. information Customer : MERCEDES-BENZ 1st speed rpm : 600 Engine : 0M402 A Rack travel in mm : 14.10...14.30 1st version kW : 280.0 Del.quantity cm3/: 22.5...22.7 : 1900 Rated speed 100 s: (22.2...23.0) TEST BENCH REQUIREMENTS cm3 : 0.6Spread Test oil inlet temp. °C : 38...42 100 s: (0.9) 2nd speed rpm : 300.0
Rack travel in mm : 5.9...6.5
Del.quantity cm3/ : 1.6...2.2 Overflow valve : 1 417 413 025 100 s: (1.3...2.5) Inlet press., bar: 1.50 Spread cm3 : 0.6 100 s: (1.0) Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position : 1 688 901 105 Degree: -2 rpm : 600 assembly Opening. Rack travel in mm : 19.20...20.80 : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,8 1st version Speed rpm : 600 Aneroid pressure h: 1000 : 1 680 750 075 Test Lines : 225.0...227.0 Del.quantity 1000 : (222.0...230.0) Outside diameter : 6.00 Spread cm3 x Wall thickness 1000 : (9.00) : 8.00x2.50x1000 x Length mm RATED SPEED

Insp. values in parentheses 1st version Set equal delivery quant. per values \_\_\_\_ Setting point: Speed

: 600

rpm

(A) Injection pump setting values

Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.98 rpm : 990...1005 Speed 2nd rack travel in: 4.00 Speed rpm: 1070...1100 4th rack travel in: 1150 Speed rpm : 0.00...1.50 Speed LOW IDLE 1 Control lever position degrees: 70...78 Testing: Speed rom Minimum rack trave: 7.50 Speed rpm : 300
Rack travel in mm : 5.90...6.50
Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.50 2nd speed rpm : 950 Rack travel in m: 13.90...14.10 3rd speed rpm : 800 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man hPa : 1000 Pressure Rack travel mm : 14.10...14.30 Measurement 1/min: 600 Speed 1st pressure hPa : 450 Rack travel in m: 10.90...11.20 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1200 Rack travel in m: 14.20...14.40 \* 4th pressure hPa : -Rack travel in m: 10.10...10.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 950 Del.quantity cm3/ : 216.0...219.0 1000 s: (213.0...222.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 : 750 Speed וחכיו Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rom Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Spread cm3 : 8.001000 s: (12.0)

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.90 Speed rpm : 990...1005

STARTING FUEL DELIVERY

#### Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks Prestroke mm : 5.50...5.60 Test sheet : MB 12,8 o 1 : (5.45...5.65) Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-Edition : 31.01.92 : 27.9.91 Replaces : ISO-4113 Test oil Combination no. : 0 402 648 894 Injection pump Phasing : 0-45-90-135-180-225-Pump designation : PE8P120A320LS7835 270-315 : 0 412 628 847 EP type number Tolerance + - \* : 0.50 (0.75) Governor Governor design. : RQV300...950PA797-18 Time to cyl. no. : 8 Governer no. : 0 421 813 886 BASIC SETTING Customer-spec, information Customer : MERCEDES-BENZ 1st speed rpm: 600 Engine : 0M402 A Rack travel in mm : 14.10...14.30 1st version kW : 280.0 Del.quantity cm3/: 22.5...22.7 : 1900 Rated speed 100 s: (22.2...23.0) TEST BENCH REQUIREMENTS cm3 : 0.6 Spread Test oil inlet temp. °C : 38...42 100 s: (0.9) Overflow valve 2nd speed rpm : 300.0 Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2 : 1 417 413 025 100 s: (1.3...2.5) Inlet press., bar: 1.50 cm3 : 0.6 Spread Overflow 100 s: (1.0) quantity min. 1/h: 100...120 (B) Setting of injection pump Test nozzle holder with governor : 1 688 901 105 assembly GUIDE SLEEVE TRAVEL Opening rpm : 300 1st speed : 207...210 pressure, bar : 1.00...1.50 travel mm 2nd speed 567 LIDOU . Orifice plate 4.40...4.90 travel mm rpm : 780 diameter mm : 0.8 3rd speed : 6.10...6.60 travel mm rpm : 1009 4th speed Test Lines : 1 680 750 075 travel mm : 8.30...8.80 5th speed rpm : 1092 Outside diameter : 9.80...10.30 travel mm x Wall thickness : 8.00x2.50x1000 x Length mm GUIDE SLEEVE POSITION Control-lever position (A) Injection pump setting values Insp. values in parentheses Degree: -1 rpm : 980

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Set equal delivery quant.

per values \_

1st version Speed rom : 600 Aneroid pressure h: 1000 Del.quantity : 225.0...227.0 1000 : (222.0...230.0) Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 122...130 Testing: 1st rack travel in: 12.90 Speed : 990...1000 mom. 2nd rack travel in: 4.00 : 1070...1100 Speed mcm 4th rack travel in: 1250 Speed : 0.00...1.50 man LOW IDLE 1 Control Lever position degrees: 80...88 Testing: Speed **LIDU** Minimum rack trave: 7.50 MCC Rack travel in mm : 5.90...6.50 CONSTANT REGULATION rpm : 250...360 Speed TORQUE CONTROL Dimension a mm : 0.50 2nd speed : 950 rpm Rack travel in m: 13.90...14.10 3rd speed : 800 riom Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man hPa : 1000 Pressure Rack travel mm : 14,10...14.30

Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.00...10.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13 00 F22

3rd pressure hPa : 1200 Rack travel in m: 14.20...14.40 \* 4th pressure hPa : -Rack travel in m: 2.50...9.80 START CUT-OUT 1/n : 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 : 950 l'pid Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1500 Speed mqn Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) cm3 : 8.00 Spread 1000 s: (12.0) Ameroid pressure h: -Speed : 500 rpm Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.90 rpm : 990...1000 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 12,8 o 2

: 31.01.92 : 21.8.91 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 648 895

Injection pump

Pump designation: PE8P120A320LS7835 EP type number : 0 412 628 847

Cove mor

Governor design. : RQ300/1050PA972-1 Governer no. : 0 421 801 545

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M402 A Engine

: 280.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyt. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.20...14.40

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread

cm3 : 0.6 100 s: (1.0)

GUIDE SLEEVE POSITION Control-Lever position

> Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 225.0...227.0

1000 : (222.0...230.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom

Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.80 Speed rpm : 1090...1105 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1350 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rom Rack travel in mm: 6.5 Testing: : 200 Speed rpm Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 5.20...6.80 Rack travel in mm: 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.50 : 950 and speed that Rack travel in m: 13.80...14.00 3rd speed rpm : 800 Rack travel in m: 14.50...14.70 Ameroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 14.20...14.40 Measurement 1/min : 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.80...11.10 2nd pressure hPa : 650 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1200 Rack travel in m: 14.30...14.40 4th pressure hPa : -Rack travel in m: 9.30...9.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500

Speed rpm : 1050 Del.quantity cm3/: 214.0...217.0

1000 s: (211.0...220.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 : 800 Cesa rem Del.quantity cm3/: 232.0...236.0 1000 s: (229.0...239.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.80 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/: 30.0...40.0
1000 s: (26.0...44.0)
Rack travel ir nam : 9.10...9.40

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 25...27 Note remarks Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 20.00...21.00

Firing order : 8-7-2-6-3-5-4-1 Test sheet : MB 14,7 v 2 : 31.01.92 Edition : 21.6.91 Replaces : ISO-4113 Test oil Combination no. : 0 402 648 899 Phasina : 0-45-90-135-180-225-Injection pump 270-315 Pump designation : PE8P120A320LS7839 Tolerance + - ° : 0.50 (0.75) EP type number : 0 412 628 849 Governor Time to cyl. no. : 8 Governor design. : RQ300/950PA971-5 : 0 421 801 559 BASIC SETTING Governer no. Customer-spec, information 1st speed rpm: 600 Engine : 04442 LA Rack travel in mm : 14.90...15.10 : 370.0 1st version kW Del.quantity cm3/: 25.6...25.8 : 1900 Rated speed 100 s: (25.3...26.1) TEST BENCH REQUIREMENTS cm3 : 0.6Spread Test oil inlet temp. °C : 38...42 100 s: (0.9) Overflow valve rpm : 300.0 2nd speed : 1 417 413 025 Rack travel in mm: 6.0...6.6 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Inlet press., bar: 1.50 cm3 : 0.6Spread 100 s: (1.0) Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position assembly : 1 688 901 105 Degree: -2 rpm : 600 Speed Rack travel in mm: 19.20...20.80 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,8 1st version Speed rpm : 600 Aneroid pressure h: 1050 Test Lines : 1 680 750 075 Del.quantity : 256.0...258.0 1000 : (253.0...261.0) Outside diameter cm3 : 6.00 Spread x Wall thickness 1000 : (9.00) : 8.00x2.50x1000 x Lenath mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. 1st version per values \_\_\_\_ Setting point: Speed rpm : 600 BEGINNING OF DELIVERY Rack travel in mm: 20.0

Testina: 1st rack travel in: 15.30 Speed rpm : 990...1005 2nd rack travel in: 4.00 Speed rpm : 1075...1105 4th rack travel in: 1150 Speed nom : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.3 Testing: Speed rpm : 200 Minimum rack trave: 7.60 Speed Speed man : 300 Rack travel in mm : 6.00...6.60 Rack travel in mm : 2.00 Speed : 370...410 rpm Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom Pressure hPa : 1050 Rack travel mm : 15.10...15.30 Measurement Speed  $1/\min : 600$ 1st pressure hPa : 350 Rack travel in m: 10.20...10.40 2nd pressure hPa : 800 Rack travel in m: 14.00...14.20 3rd pressure hPa : 1300 Rack travel in m: 15.20...15.30 \* 4th pressure hPa : 1600 Rack travel in m: 15.80...16.00 5th pressure hPa : -Rack travel in m: 9.30...9.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 2000 : 950 Speed LOW Del.quantity cm3/: 279.0...282.0 1000 s: (276.0...285.0) cm3 : 8.00 Spread

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rrm : 500 Del.quantity cm3/: 136.0...138.0 1000 s: (133.0...141.0) Spread cm3 : 8.00 1000 s: (12.0)

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 15.30 rpm : 990...1005 Speed

STARTING FUEL DELIVERY

Speed : 100 Rack travel in mm : 9.30...9.60

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

1000 s: (12.0) Aneroid pressure h: 2000

rpm : 800 Del.quantity cm3/: 283.0...287.0 1000 s: (280.0...290.0)

Note remarks

: MB 14,7 V Test sheet : 22.01.92 : 23.10.91 Edition Replaces Test oil : ISO-4113

: 0 402 648 902 Combination no.

Injection pump

Pump designation : PE8P12OA32OLS7839 EP type number : 0 412 628 849

Governor

Governor design. : RQ300/1050PA972-5 : 0 421 801 564 Governer no.

Customer-spec. information

: 0M442 LA Engine

: 370.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

: 0-45-90-135-180-225-Phasing 270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.10...15.30

Del.quantity cm3/: 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6

Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1050

Del.quantity : 256.0...258.0 1000 : (253.0...261.0)

: 6.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 15.20 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 Speed rpm: 1160...1190
4th rack travel in: 1250
Speed rom : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.5 Testina: Speed rpm : 200 Minimum rack trave: 7.80 Speed rpm : 300 Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm 2nd speed rpm : 1050 Rack travel in m: 16.20...16.40 : 800 3rd speed rpm Rack travel in m: 16.30...16.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1050 Pressure Rack travel mm : 14.60...14.80 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 9.70...9.90 2nd pressure hPa : 800 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1300 Rack travel in m: 14.70...14.80 \* 4th pressure hPa : 1600 Rack travel in m: 15.30...15.50 5th pressure hPa : -Rack travel in m: 9.30...9.60 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 271.0...274.0
1000 s: (268.0...277.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: 2000
Speed rpm : 800
Del.quantity cm3/: 276.0...280.0
1000 s: (273.0...283.0)
Spread cm3 : 8.00
1000 s: (12.0)
Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 136.0...138.0
1000 s: (133.0...141.0)
Spread cm3 : 8.00

1000 s: (12.0)

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 15.20 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 9.30...9.60

#### Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

1st version

Aneroid pressure h: 2000

LDW

: 1050

Note remarks

Test sheet : MB 14,7 v 1 Edition : 24.01.92 : 29.11.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 907

Injection pump

Pump designation : PE8P120A320LS7839 EP type number : 0 412 628 849

Governor

Governor design. : RQV300...950PA797-22

: 9 421 813 909 Governer no.

Customer spec. information

: 0M442 LA Engine

1st version kW : 370.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

**Overflow** 

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2,50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 : (4.95...5.15) Prestroke mm

Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.00...15.20

Del.quantity cm3/: 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.2...5.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 300

travel mm : 1.00...1.50

2nd speed rpm : 617

travel mm 5.00...5.50

: 780 3rd speed rpm

: 6.10...6.60 travel mm

4th speed : 1010 rpm

travel mm : 8.30...8.80

rpm : 1092 5th speed

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1020 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 1050 : 256.0...258.0 1000 : (253.0...261.0) Del.quantity cm3 : 6.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 15.00 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 82...90 Testing: Speed rpm : 200 Mininum rack trave: 8.00 rpm : 300 Rack travel in mm : 5.90...6.50 CONSTANT REGULATION rpm : 300...400 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 1050 Rack travel mm : 15.00...15.20 Measurement Speed 1/min: 600 1st pressure hPa : 350 Rack travel in m: 10.00...10.20 2nd pressure hPa : 800 Rack travel in m: 13.80...14.00 3rd pressure hPa : 1300 Rack travel in m: 15.20...15.40 4th pressure hPa : 1600 Rack travel in m: 15.80...16.00 5th pressure hPa : Rack travel in m: 9.20...9.50

Speed 1/min: 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 2100 rpm : 950 Speed Del.quantity cm3/: 279.0...282.0 1000 s: (276.0...285.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 2100 Speed : 800 ripin Del.quantity cm3/: 286.0...290.0 1000 s: (283.0...286.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 136.0...138.0 1000 s: (133.0...141.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version

1mm rack travel less than

full load rack tr: 15.00 rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rom : 100 Del.quantity cm3/: 275.0...295.0 1000 s: (271.0...299.0)

Remarks:

START CUT-OUT

Note remarks

Test sheet : MB 12,8 o 3 Edition • 22.01.92 Replaces : 26.4.91 Test oil : ISO-4113

Combination no. : 0 402 648 914

Injection pump

Pump designation : PE8P120A320LS7835 EP type number : 0 412 628 847

Governor

Governor design. : RQV300...1050PA797

-30

: 0 421 813 921 Governer no.

Customer-spec. information

: OM402 A Engine

: 280.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60 : (5.45...5.65)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 14.80...15.00

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.50...1.00

2nd speed rpm : 625

travel mm : 4.80...5.30

3rd speed rpm : 830

: 5.90...6.40 travel mm

rpm : 1108 4th speed

: 8.10...8.60 travel mm

5th speed rpm: 1190

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1130 Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm:600Aneroid pressure h: 1000 : 225.0...227.0 1000 : (222.0...230.0) Del.quantity Spread cm3 : 6.00 1000 : (9.00) RATED SPEED ist version Control lever position degrees: 118...126 Testina: 1st rack travel in: 13.30 Speed rpm : 1090...1100 2nd rack travel in: 4.00 : 1170...1200 Speed rom 4th rack travel in: 1250 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed : 200 riom. Minimum rack trave: 7.80 : 300 Speed rpm Rack travel in mm : 6.20...6.80 CONSTAINT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 0.60 2nd speed : 1050 rpm Rack travel in m: 14.30...14.50 rpm : 800 3rd speed Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure : 14.80...15.00 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 10.00...10.20 2nd pressure hPa : 650 Rack travel in m: 13.60...13.80

4th pressure hPa : -Rack travel in m: 9.30...9.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed : 1050 rpm Del.quantity cm3/: 214.0...217.0 1000 s: (211.0...220.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 Speed rpm Del.quantity cm3/: 232.0...236.0 1000 s: (229.0...239.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.30 rpm : 1090...1100 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0) Remarks: \* Increase in control-rod travel with

respect to setting at Least 0.1 mm

3rd pressure hPa : 1200

Rack travel in m: 14.90...15.00 \*

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 12,8 o 4 Edition : 22.01.92 Replaces : 8.10.91 Test oil : ISO-4113 Combination no. : 0 402 648 915 Injection pump Pump designation : PE8P120A320LS7835 : 0 412 628 847 EP type number Governor Governor design. : RQ300/1050PA993-1 Governer no. : 0 421 801 582 Customer-spec. information Customer : MERCEDES-BENZ : 0M402 A Engine : 280.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 105 assembly Opening | : 207...210 pressure, bar

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm Rack travel in mm : 20.00...21.00 Firing order : 8- 7- 2- 6- 3- 5-

Phasina : 0-45-90-135-180-225-270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 14.80...15.00

Del.quantity cm3/: 22.5...22.7

100 s: (22.2...23.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 225.0...227.0 1000 : (222.0...230.0)

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

: 600 Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 13.70

Speed rpm : 1090...1105

2nd rack travel in: 4.00

rpm : 1170...1200 Speed

4th rack travel in: 1350

rom : 0.00...1.50Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm: 6.5

Testina:

Speed rpm : 200 Minimum rack trave: 7.80 : 300 Speed rpm

Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00

: 380...420 Speed rpm

TORQUE CONTROL

Dimension a mm : 0.50 : 1050 2nd speed rom

Rack travel in m: 14.70...14.90

3rd speed rpm : 800

Rack travel in m: 15.20...15.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 nom. Pressure hPa : 1000

Rack travel mm : 14.80...15.00

Measurement

1/min: 600 Speed

1st pressure hPa : 250

Rack travel in m: 10.00...10.20

2nd pressure hPa : 650

Rack travel in m: 13.60...13.80

3rd pressure hPa : 1200

Rack travel in m: 14.90...15.00 \*

4th pressure hPa : -

Rack travel in m: 9.90...10.20

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500 Speed rpm : 1050 Del.quantity cm3/: 214.0...217.0

1000 s: (211.0...220.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800 Del.quantity cm3/ : 232.0...236.0 1000 s: (229.0...239.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: rpm\_ : 500 Speed

Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0)

cm3 : 8.00 Spread

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.70

rpm : 1090...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 14,7 v 5 Edition : 22.01.92 : 23.10.91 Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 921

Injection pump

Pump designation: PE8P120A320LS7839 EP type number : 0 412 628 849

Governor

Governor design. : RQ300/950PA993-8

: 0 421 801 618 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

: 370.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.00...15.20

Del.quantity cm3/: 25.6...25.8

100 s: (25.3...26.1)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.0...6.6

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1050

Del.quantity : 256.0...258.0

1000 : (253.0...261.0) cm3 : 6.00

Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 Testing: 1st rack travel in: 15.40 rpm : 990...1005 Speed 2nd rack travel in: 4.00 rpm : 1075...1105 Speed 4th rack travel in: 1150 rom : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300° Rack travel in mm: 6.3 Testina: Speed rpm : 200 Minimum rack trave: 7.60 : 300 Speed rom Rack travel in mm : 6.00...6.60 Rack travel in mm: 2.00 rpm : 380...420 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 1050 Rack travel mm : 15.00...15.20 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.00...10.20 2nd pressure hPa : 800 Rack travel in m: 13.80...14.00 3rd pressure hPa : 1300 Rack travel in m: 15.20...15.40 4th pressure hPa : 1600 Rack travel in m: 15.20...15.40 5th pressure hPa : -Rack travel in m: 9.50...9.80 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 2100 : 950 Speed rpm Del.quantity cm3/: 279.0...282.0

1000 s: (276.0...285.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 2100 : 800 Speed rpm Del.quantity cm3/: 286.0...290.0 1000 s: (283.0...293.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 144.0...146.0 1000 s: (141.G...149.0) Spread cm3 : 8.001000 s: (12.0)

**EREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 15.40 Speed rpm : 990...1005

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0)

•

Remarks:

Note remarks

Test sheet : MB 14,7 x 1 Edition : 18.12.91

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 648 925

Injection pump

Pump designation : PE8P120A320LS7843 EP type number : 0 412 628 859

Governor

Governor design. : RQV350...950PA866-18

Governer no. : 0 421 813 963

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 320.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 3-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.20...14.40

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm: 350.0

Rack travel in mm : 5.5...6.1 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.30...1.80

2nd speed rpm : 424

travel mm : 2.30...2.80

3rd speed rpm : 700

travel mm : 4.10...4.60

4th speed rpm: 1009

travel mm : 7.90...8.40

5th speed rpm : 1220

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

ed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 600 Speed Aneroid pressure h: 900 : 222.0...224.0 Del.quantity 1000 : (219.0...227.0) Spread cm3 : 6.00 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 120...128 Testing: 1st rack travel in: 13.80 Speed rpm : 990...1000 2nd rack travel in: 4.00 Speed rpm : 1050...1105 4th rack travel in: 1200 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 82...90 Testing: Speed rom Minimum rack trave: 7.10 rpm Rack travel in mm : 5.50...6.10 CONSTANT REGULATION rpm : 350...550 Speed TORQUE CONTROL 2nd speed rpm : 950 Rack travel in m: 14.80...15.00 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 900 Pressure Rack travel mm : 14.20...14.40 Measurement 1/min: 600 Speed

1st pressure hPa : 300 Rack travel in m: 10.20...10.40 2nd pressure hPa : 600

3rd pressure hPa : 1100

Rack travel in m: 13.50...13.70

Rack travel in m: 14.50...14.70 4th pressure hPa : 1200 Rack travel in m: 15.10...15.30 5th pressure hPa : -Rack travel in m: 9.80...10.10 START CUT-OUT 1/min : 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 : 950 Speed rpm Del.quantity cm3/: 243.0...245.0 1000 s: (240.0...248.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1600 : 800 Speed rpm Del.quantity cm3/: 255.0...259.0 1000 s: (252.0...262.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/: 125.0...127.0
1000 s: (122.0...130.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.80 Speed rpm : 990...1000 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 14,7 u 4 : 22.01.92 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 648 926 Injection pump Pump designation : PE8P120A320LS7840 : 0 412 628 850 EP type number Governor Governor design. : RQ300/1050PA972-9 : 0 421 801 632 Governer no. Customer-spec. information Customer : MERCEDES-BENZ Engine : OM442 A : 250.0 1st version kW Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Overflow quantity min. 1/h: 100...120 Test nozzle holder : 1 688 901 105 assembly Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8

Test lines : 1 680 750 075 Outside diameter x Wall thickness : 8.00X2.50X1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 5.20...5.30 : (5.15...5.35) Prestroke mm Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order Phasing : 0-45-90-135-180-225-270-315 Tolerance + - \* : 0.50 (0.75) Time to cyl. no. : 8 BASIC SETTING 1st speed rpm: 600 Rack travel in mm : 12.50...12.70 Del.quantity cm3/: 18.8...19.0 100 s: (18.5...19.3) Spread cm3 : 0.6100 s: (0.9) rpm : 300.0 2nd speed Rack travel in mm: 6.0...6.6 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.6 Spread 100 s: (1.0) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600 Aneroid pressure h: 700 : 188.0...190.0 Del.quantity 1000 : (185.0...193.0) : 6.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Setting point:

: 600

rpm

Speed

Rack travel in mm : 20.0 Testing: 1st rack travel in: 12.50 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1250 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed : 200 תומה Minimum rack trave: 7.90 rpm : 300 Speed Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 : 380...420 Speed rpm Aneroid/Altitude Compensator Test 1st version Settina Speed rpm : 600 Pressure hPa : 700 Rack travel mm : 12.50...12.70 Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 13.10...13.30 2nd pressure hPa : 440 Rack travel in m: 11.90...12.10 3rd pressure hPa : 920 Rack travel in m: 12.70...12.90 4th pressure hPa : -Rack travel in m: 10.60...10.90 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1300 Speed rpm: 1050 Del.quantity cm3/: 210.0...213.0 1000 s: (207.0...216.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1300 Speed : 800 rpm Del.quantity cm3/: 212.0...216.0 1000 s: (209.0...219.0)

Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) Spread cm3: 8.00 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.50 Speed rom : 1090...1105

•

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 14,7 u 5 : 22.01.92 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 927

Injection pump

Pump designation: PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQV300...1050PA797

--36

: 0 421 813 984 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

1st version kW : 250.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

**BEGINNING OF DELIVERY** 

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-4- 1 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 3

BASIC SETTING

1st speed rpm: 600

Rack travel in mm: 12.50...12.70

Del.quantity cm3/: 18.8...19.0

100 s: (18.5...19.3)

Spread cm3 : 0.6

100 s: (0.9)

rom : 300.0 2nd speed Rack travel in mm: 6.0...6.6

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.60 travel mm 2nd speed rpm : 470 travel mm : 3.00...3.50

3rd speed rpm : 830

: 5.90...6.40 travel mm

rpm : 1110 4th speed

travel mm : 8.20...8.70 : 1183

5th speed rpm

: 9.60...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1030 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS rpm : 600 Speed Aneroid pressure h: 700 Del.quantity : 188.0...190.0 1st version 1000 : (185.0...193.0) Aneroid pressure h: 1300 Speed rpm : 1030 Del.quantity cm3/: 210.0...213.0 cm3 : 6.00 Spread 1000 : (9.00) 1000 s: (207.0...216.0) RATED SPEED cm3 : 8.00 Spread 1000 s: (12.0) 1st version Aneroid pressure h: 1300 Control Lever : 800 Speed rpm Del.quantity cm3/: 212.0...216.0 1000 s: (209.0...219.0) position degrees: 118...126 Testina: cm3 : 8.00 Spread 1st rack travel in: 12.50 1000 s: (12.0) rpm : 1090...1100 Speed Aneroid pressure h: -2nd rack travel in: 4.00 Speed rpm : 500 : 1160...1190 Del.quantity cm3/: 130.0...132.0 Speed **Lbu** 4th rack travel in: 1250 1000 s: (127.0...135.0) rpm : 0.00...1.00Speed cm3 : 8.00 Spread 1000 s: (12.0) LOW IDLE 1 Control lever position degrees: 82...90 **BREAKAWAY** Testing: 1st version : 200 Speed rpm 1mm rack travel less than Minimum rack trave: 7.90 : 300 full load rack tr: 12.50 rpm Rack travel in mm : 6.20...6.80 rpm : 1090...1100 Speed Speed : 380...420 rom STARTING FUEL DELIVERY CONSTANT REGULATION : 300...500 Speed rom Speed rpm : 100 Del.quantity\_cm3/ : 180.0...200.0 Aneroid/Altitude 1000 s: (176.0...204.0) Compensator Test Remarks: 1st version Setting Street C : 600 MC hPa : 700 Pressure Rack travel mm : 12.60...12.80 Measurement 1/min : 600Speed 1st pressure hPa : 300 Rack travel in m: 11.30...11.50 2nd pressure hPa : 900 Rack travel in m: 12.80...13.00 3rd pressure hPa : Rack travel in m: 10.60...10.90 START CUT-OUT

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.50...4.60 : (4.45...4.65) Rack travel in mm : 9.00...12.00 Note remarks : 10- 9- 4- 1- 8- 7-Firing order 6-3-5-2 Test sheet : MAN 18,2 h Edition : 31.07.90 : 1.9.89 Replaces Test oil : ISO-4113 : 0-45-72-117-144-189-216-261-288-333 : 0.50 (0.75) Phasina Combination no. : 0 402 649 809 Tolerance + - \* Injection pump Pump designation : PE10P120A520LS7825 Time to cyl. no. : 10 : 0 412 629 805 EP type number BASIC SETTING Governor Governor design. : RQV250...1150PA902-3 Governer no. : 0 421 813 761 1st speed riom: 1150 Customer-spec. information Rack travel in mm: 13.00...13.10 Customer : MAN Del.quantity cm3/: 28.4...28.6 Engine : D 2840 LXE 100 s: (28.1...28.9) 1st version kW : 603.0 : 2300 Rated speed cm3 : 0.5Spread TEST BENCH REQUIREMENTS 100 s: (0.9) rpm : 500 Test oil 2nd speed Rack travel in mm: 8.80...9.00 inlet temp. °C : 38...42 Del.quantity cm3/: 14.9...15.1 Overflow valve 100 s: (14.6...15.4) : 1 417 413 025 Spread cm3 : 0.8100 s: (1.2) Inlet press., bar: 1.50 3rd speed rpm : 250 Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 5.2...6.0 \*\* 100 s: (-) Test nozzle holder : 1 688 901 019 assembly Opening. (B) Setting of injection pump pressure, bar : 207...210 with governor Orifice plate GUIDE SLEEVE TRAVEL diameter mm : 0,8 1st speed rpm : 250 : 0.90...1.10 travel mm 2nd speed rpm : 450 : 2.90...3.50 rpm : 750 Test Lines : 1 680 750 067 travel mm 3rd speed : 5.50...5.90 : 1150 Outside diameter travel mm x Wall thickness 4th speed rom x Length mm : 6.00x1.50x1000 : 9.20...9.40 travel mm : 1400 5th speed rpm (A) Injection pump setting values travel mm : 13.00...14.00 Insp. values in parentheses Set equal delivery quant. GUIDE SLEEVE POSITION per values \_\_\_\_ Control-lever position Degree: -1

rpm : 1225

Rack travel in mm : 15.20...17.80

Speed

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

FULL LOAD DELIV. AT FULL LOAD STOP	† FUEL DELIVERY CHARACTERISTICS
1st version Speed rpm : 1150 Aneroid pressure h: 1300 Del.quantity : 284.0286.0	1st version Aneroid pressure h: - Speed rpm: 500 Del.quantity cm3/: 149.0151.0 1000 s: (146.0154.0) Spread cm3: 8.00 1000 s: (12.0)
1st version	+ BREAKAWAY
Control Lever position degrees: 118126	1st version 1mm rack travel less than
Testing: 1st rack travel in: 12.00 Speed rpm : 11901200	full load rack tr: 12.00 Speed rpm : 11901200
2nd rack travel in: 4.00  Speed rpm : 12851315  4th rack travel in: 1450  Speed rpm : 0.001.00	STARTING FUEL DELIVERY
LOW IDLE 1 Control lever	Speed
position degrees: 7684  Testing: Speed rpm : 100 Minimum rack trave: 8.90 Speed rpm : 250 Rack travel in mm : 7.307.50 Rack travel in mm : 2.00 Speed rpm : 430490	Speed rpm : 100 Del.quantity cm3/: 0 * 1000 s: (-) Rack travel in mm : 17.521.0 HIGH IDLE 1st version
Aneroid/Altitude Compensator Test	Speed rpm : 500 Rack travel in mm : 0.007.00 Del.quantity cm3/ : 0 * 1000 s: (-)
1st version Setting Speed rpm : 500 Pressure hPa : 1300 Rack travel mm : 13.0013.10	2nd version Speed rpm : 500 Rack travel in mm : 0.007.50 Del.quantity cm3/: 0.050.0 1000 s: (-)
Measurement Speed 1/min: 500	3rd version Speed rpm : 500 Rack travel in mm : 8.108.30
1st pressure hPa : - Rack travel in m: 8.809.00 2nd pressure hPa : 100 Rack travel in m: 9.309.40 3rd pressure hPa : 470 Rack travel in m: 12.0012.40	Del.quantity cm3/: 125.0 1000 s: (-)  LOW IDLE  Speed rpm : 250
START CUT-OUT	Rack travel in mm : 7.307.50  Del.quantity cm3/ : 52.060.0 **  1000 s: (-)
Speed 1/min: 200 (220)	Remarks:

## : MAN-NR. 2-7961

\* applies to cylinders 1, 2, 3, 7 and 9
\*\* applies for cylinders 4, 5, 6, 8 and 10

## APPLICATION

Ship

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 9,6 t : 18.12.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 676 811

Injection pump

Pump designation : PE6P120A320LS7834-1

EP type number : 0 412 626 857

Governor

Governor design. : RSV675...1050P0A826

: 0 421 833 366 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 401 LA

1st version kW : 205.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

**Overflow** 

quantity min. 1/h: 100...120

Test nozzle holder

: 0 688 901 019 \*assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 Prestroke mm

: (5.45...5.65)

Rack travel in mm : 19.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 22.1...22.3

Spread cm3 : 0.6

100 s: (6.5)

2nd speed rpm : 675.0

Rack travel in mm: 3.4...4.0

Del.quantity cm3/: 1.6...2.2

100 s: (-)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed

Del.quantity : 221.0...223.0

Spread : 6.00 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 85...93

Testing:

1st rack travel in: 13.10 rpm : 1070...1080 Speed 2nd rack travel in: 4.00 Speed rpm : 1100...1118 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm : 675 Rack travel in mm : 3.7

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 rpm : 675 Rack travel in mm : 3.40...4.00 Rack travel in mm : 2.00 rpm : 680...720 Speed

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.10

rpm : 1070...1080 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 240.0...260.0 1000 s: (-)

Remarks:

G19

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: MB 14,7 g 2 : 05.03.90 : 1.12.89 Test sheet Edition

Replaces Test oil : ISO-4113

Combination no. : 0 402 678 804

Injection pump

Pump designation : PE8P12DA320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RSV350...750P0A825-4

: 0 421 833 261 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442LA

1st version kW : 255.0 Rated speed : 1500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

**Overflow** 

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm: 9.00...12.00 Firing order: 8-7-2-6-3-

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 15.70...15.80

Del.quantity cm3/: 24.1...24.3

100 s: (23.8...24.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 5.4...5.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 2.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 241.0...243.0 Del.quantity

1000 : (238.0...246.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Scattrol Lever position degrees: 74...82 Testing: 1st rack travel in: 14.70 rpm : 750...755 Speed 2nd rack travel in: 4.00 Speed rpm : 1135...1150 4th rack travel in: 1400 Speed rpm : 0.30...1.40 LCW IDLE 1 Control lever position degrees: 60...68 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 5.6 Testing: Speed rpm : 100 Minimum rack trave: 15.00 Speed rpm : 350
Rack travel in mm : 5.40...5.80
Rack travel in mm : 2.00 rom : 350...410 Speed SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL 2nd speed rpm : 900 Rack travel in m: 13.20...13.40 3rd speed rpm : 1000 Rack travel in m: 12.40...12.60 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/ : 246.0...252.0 1000 s: (243.0...255.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version

1mm rack travel less than

full load rack tr: 14.70 rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 250.0...270.0 1000 s: (246.0...274.0)

Remarks:

**APPLICATION** 

Generator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAN 10,0 f : 31.01.92 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 735 806 Injection pump Pump designation: PES5P120A720/3LS7250 : 0 412 725 809 EP type number Governor Governor design.: RQV325...1000PA960-8 : 0 421 815 308 Governer no. Customer-spec. information Customer : D2865LFU3 Engine 1st version kW : 235.0 : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 105 Opening : 207...210 pressure, bar Orifice plate diameter mm : 0.8 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1,50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 **G22** 

Prestroke mm : 4.80...4.90 : (4.75...4.95) Rack travel in mm : 15.00...16.00 Firing order : 1-3-5-4-2 : 0-72-144-216-288 Phasina Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 5 BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25 BASIC SETTING rpm: 650 1st speed Rack travel in mm : 12.70...12.80 Del.quantity cm3/: 26.6...26.8 100 s: (26.3...27.1) cm3 : 0.5Spread 100 s: (0.9) rpm : 325.0 2nd speed Rack travel in mm : 6.0...6.4 Dol.quantity cm3/ : 4.7...5.3 100 s: (4.4...5.6) Spread cm3 : 0.8 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1055 1st speed travel mm : 10.40...10.60 2nd speed rpm : 325 travel mm : 2.40...2.60 rpm : 500 3rd speed 3.40...4.00 travel mm : 750 4th speed rom : 6.80...7.20 travel mm 1350 5th speed rpm : 13.00...14.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1110 Speed

Rack travel in mm : 15.20...17.80 1/min: 900 Speed FULL LOAD DELIV. AT FULL LOAD STOP 1st pressure hPa : -Rack travel in m: 9.20...9.40 1st version 2nd pressure hPa : 170 Rack travel in m: 9.40...9.50 Speed nom : 650 Aneroid pressure h: 1200 3rd pressure hPa : 600 Del.quantity Rack travel in m: 11.90...12.10 : 266.0...268.0 1000 : (263.0...271.0) Spread cm3 : 5.00 START CUT-OUT 1000 : (9.00) 1/min: 245 (265) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever position degrees: 293...301 1st version Aneroid pressure h: 1200 : 900 Testina: Speed rpm 1st rack travel in: 11.90 Del.quantity cm3/: 261.0...265.0 rpm : 1040...1050 Speed 1000 s: (258.0...268.0) 2nd rack travel in: 4.00 Aneroid pressure h: 1200 Speed : 1140...1170 : 1000 mart Speed rpm Del.quantity cm3/: 243.5...246.5 1000 s: (240.5...249.5) 4th rack travel in: 1350 rom : 0.00...1.00Speed Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 159.0...161.0 LOW IDLE 1 Control Lever position degrees: 249...257 1000 s: (156.0...164.0) Testing: Speed **BREAKAWAY** rom Minimum rack trave: 7.70 rpm : 325 1st version Rack travel in mm : 6.10...6.30 1mm rack travel less than CONSTANT REGULATION full load rack tr: 11.90 rpm : 340...450 Speed Speed rpm : 1040...1050 TORQUE CONTROL STARTING FUEL DELIVERY Dimension a mm : ? Torque control curve - 1st version rpm : 1000 1st speed Speed : 100 rpm Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Rack travel in m: 12.90...13.00 rpm : 900 2nd speed Rack travel in m: 13.30...13.50 rpm : 650 3rd speed LOW IDLE Rack travel in m: 12.60...12.80 : 325 Speed rpm Aneroid/Altitude Rack travel in mm : 6.00...6.40 Compensator Test Del.quantity cm3/: 47.0...53.0 1000 s: (44.0...56.0) cm3 : 8.00 Spread 1st version 1000 s: (12.00) Setting Speed : 900 rpm Remarks: hPa : 1200 Pressure : MAN-NR. 3-7201 : 13.30...13.50 Rack travel mm Setting and blocking of pointer of

start-of-delivery sensor on cyl. 5

Measurement

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.35...4.45 Prestroke am : (4.30...4.50) Note remarks Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order Test sheet : CUM 5,9 y Edition : 18.01.91 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 736 801 Tolerance + - ° : 0.50 (0.75) Injection purp Time to cyl. no. : 1 Pump designation : PES6P110A120RS7186 EP type number : 0 412 716 800 BASIC SETTING Governor Governor design. : RQV350...1250PA924-1 1st speed rpm: 1100 : 0 421 815 226 Rack travel in mm: 10.40...10.50 Governer no. Customer-spec. information Del.quantity cm3/: 13.7...13.9 : CDC Customer 100 s: (13.4...14.2) Engine : OBTA Spread cm3 : 0.5TEST BENCH REQUIREMENTS 100 s: (0.9) Test oil rpm : 350.0 inlet temp. \*C : 38. . 42 2nd speed Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 3.0...3.6 Overflow valve : 2 417 413 047 100 s: (2.8...3.8) cm3 : 0.8 Spread Overflow 100 s: (1.2) quantity min. 1/h: 160...170 (B) Setting of injection pump Test nozzle holder with governor : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL Opening 1st speed : 350 : 207...210 pressure, bar travel mm : 1.10...1.50 : 550 rpm 2nd speed Orifice plate : 3.70...4.30 travel mm diameter mm 3rd speed : 0.6 900 **Lbw** 6.20...6.80 travel mm 4th speed 1300 rom Test lines 9.70...9.90 : 1 680 750 008 travel mm : 1375 5th speed mqn Outside diameter travel mm : 10.40...10.80 x Wall thickness : 6.00X2.00X600 x Length mm GUIDE SLEEVE POSITION Control-lever position (A) Injection pump setting values Degree: -1 Insp. values in parentheses rpm : 1375 Speed Set equal delivery quant. Rack travel in mm : 6.00...12.00 per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY Test pressure, bar: 17...19 1st version

Speed

rpm : 1100

Aneroid pressure h: 900

Del.quantity

: 137.0...139.0 1000 : (134.0...142.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 56...64

Testing:

1st rack travel in: 9.50

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

Speed rpm : 1360...1390

4th rack travel in: 1480

Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 11...19

rpm : 350

Rack travel in mm: 4.60...4.80

CONSTANT REGULATION

Speed rpm : 350...450

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 1250 1st speed

Rack travel in m: 10.50...10.60

2nd speed rpm : 1100

Rack travel in m: 10.30...10.40

3rd speed rpm : 900

Rack travel in m: 10.10...10.30

4th speed rpm : 650

Rack travel in m: 0.00...9.85

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1250 man hPa : 900 Pressure

: 10.50...10.60

Rack travel mm

Measurement

1/min: 1250 Speed

1st pressure hPa : -

Rack travel in m: 6.70...7.10

2nd pressure hPa : 200

Rack travel in m: 7.40...7.50
3rd pressure hPa : 330
Rack travel in m: 8.40...8.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 86.0...90.0 1000 s: (84.0...92.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1290...1300

LOW IDLE

Speed : 350 rpm

Rack travel in mm : 4.60...4.80

Del.quantity cm3/: 30.0...36.0 1000 s: (28.0...38.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Bow dimension:

Sliding-sleeve position = 37.0 mm Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Note remarks Test pressure, bar: 22...24 : CUM 8,3 r : 18.12.91 Test sheet : 4.35...4.45 Prestroke mm Edition : (4.30...4.50) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 22.11.91 Replaces : ISO-4113 Test oil Combination no. : 0 402 736 807 Injection pump Phasing : 0-60-120-180-240-300 Pump designation : PES6P110A120RS7214 : 0 412 716 805 EP type number Tolerance + - \* : 0.50 (0.75) Governor Governor design. : RQV350...1100PA964-1 Time to cyl. no. : 1 : 0 421 815 253 BASIC SETTING Governer no. Customer-spec. information 1st speed rom: 1050Customer : C.D.C. Rack travel in mm : 15.70...15.80 Engine : 6CTA-A Del.quantity cm3/: 20.6...20.8 : 201.0 1st version kW : 2200 100 s: (20.3...21.1) Rated speed TEST BENCH REQUIREMENTS cm3 : 0.5Scread Test oil 100 s: (0.9) inlet temp. °C : 38...42 2nd speed rpm : 350.0Rack travel in mm: 5.7...5.9 Overflow valve Del.quantity cm3/: 2.7...3.3 100 s: (2.5...3.5) : 1 417 413 047 Inlet press., bar: 1.50 cm3 : 0.8Spread 100 s: (1.2) Overflow quantity min. 1/h: 115...125 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL rpm : 350 1st speed 1.80...2.00 Opening travel mm rpm : 450 pressure, bar : 207...210 2nd speed : 3.10...3.50 : 600 travel mm Orifice plate 3rd speed mgn : 5.10...5.50 diameter mm : 0,6 travel mm : 1000 4th speed rpm : 8.10...8.30 travel mm : 1 689 750 008 Test lines 5th speed rpm : 1200 travel mm : 9.60...10.00 Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP x Length mm : 6.00X2.00X600

1st version

Speed

rpm : 1050

Del.quantity : 200.0...201.0)

Aneroid pressure h: 1500

**G27** 

(A) Injection pump setting values

Set equal delivery quant.

per values

Insp. values in parentheses

Spread cm3: 5.00 1000 : (9.00)RATED SPEED 1st version Control lever position degrees: 64...72 Testing: 1st rack travel in: 14.40 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 : 1300...1330 Speed rpm 3rd rack travel in: 4.00 4th rack travel in: 1400 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 11...19

Testing:

Speed rom Minimum rack trave: 7.20 : 350 Speed man Rack travel in mm : 5.70...5.90

CONSTANT REGULATION Speed rpm : 325...520

TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 15.70...15.80 nd speed rpm : 650 Rack travel in m: 13.20...13.60 2nd speed 3rd speed : 1100 rpm Rack travel in m: 15.40...15.60

Aneroid/Altitude Compensator Test

1st version Settina Speed : 1050 rpm Pressure hPa : 1500 Rack travel mm

: 15.70...15.80 Measurement Speed 1/min: 1050

1st pressure hPa : -Rack travel in m: 8.10...8.50 2nd pressure hPa : 335 Rack travel in m: 10.10...10.20 3rd pressure hPa : 845 Rack travel in m: 13.60...14.00 START CUT-OUT

1/min : 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1500 Speed rpm : 650 Del.quantity cm3/ : 187.5...193.5

1000 s: (184.5...196.5)

Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 91.0...95.0 1000 s: (89.0...97.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 14.40 rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

: 100 rpm Del.quantity cm3/: 135.0...175.0 1000 s: (130.0...180.0)

Rack travel in mm : 11.00...12.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: C.D.C # 3916627

Start-of-delivery mark = 5.5° after start of delivery cyl. 1.

Bow dimension: Sliding-sleeve position = 37.0 mm BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 8,3 r 4 Edition : 18.12.91 : 22.11.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 736 813

Injection pump

Pump designation : PES6P110A120RS7214 EP type number : 0 412 716 805

Governor

Governor design.

: RQV350...1100PA964-5

Governer no. : 0 421 315 257

Customer-spec. information Customer : C.D.C.

Engine : GCTA-A

1st version kW : 187.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm : (4.30...4.50)

Rack travel in mm : 9.00...12.00 Firing order : 1-5- 3- 6- 2- 4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 18.6...18.8

100 s: (18.3...19.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm: 5.7...5.9

bel.quantity cm3/: 2.7...3.3 100 s: (2.5...3.5)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 3501st speed

: 1.80...2.00 travel mm

rpm : 450 2nd speed

: 3.10...3.50 travel mm

rpm : 600 3rd speed

: 5.10...5.50 rpm : 1000 travel mm

4th speed

travel mm : 8.10 ... 8.30

5th speed rpm : 1200

travel mm : 9.60...10.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 1500

Del.quantity : 180.3...191.5)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Concrol Lever

position degrees: 62...70

Testina:

1st rack travel in: 13.50

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

Speed rpm : 1290...1320 4th rack travel in: 1400 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 11...19

Testing:

Speed rpm Minimum rack trave: 7.20 Speed rpm : 350 Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 14.50...14.60

2nd speed : 650 rpm

Rack travel in m: 13.50...13.70

3rd speed rpm : 500

Rack travel in m: 12.90...13.30

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 1100 nom hPa : 1500 Pressure

Rack travel mm : 14.50...14.60

Measurement

1/min: 1100 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 335
Rack travel in m: 10.10...10.20
3rd pressure hPa : 845

Rack travel in m: 13.60...14.00

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

rpm : 650 Del.quantity cm3/: 198.0...204.0

1000 s: (195.0...207.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 91.0...95.0

1000 s: (89.0...97.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...175.0

1000 s: (130.0...180.0)

Rack travel in mm: 10.80...11.80

LOW IDLE

Speed rpm

Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: C.D.C. # 3916628

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

: CUM 8,3 r 5 : 18.12.91 Test sheet Edition : 22.11.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 736 815

Injection pump

Pump designation : PES6P110A120RS7214

EP type number : 0 412 716 805

Governor

: RQV350...1000PA964-7 Governor design.

: 0 421 815 259 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

: 194.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm

: (4.30...4.50)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 15.80...15.90

Del.quantity cm3/: 21.7...21.9

100 s: (21.4...22.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 5.6...5.8
Del.quantity cm3/: 2.7...3.3
100 s: (2.5...3.5)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 1.60...1.80 travel mm

2nd speed : 450 rpm

: 3.00...3.40 travel mm 3rd speed : 600 rpm

travel mm

: 5.20...5.60 : 1000

4th speed rpm

: 8.40...8.60 travel mm

: 1150 5th speed rpm

: 9.80...10.20 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1500

Del.quantity : 217.0...222.0)

cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 62...70 Testing: 1st rack travel in: 14.30 rom: 1050...1060 Speed 2nd rack travel in: 4.00 Speed rpm : 1205...1235

4th rack travel in: 1300 rpm : 0.00...1.00 Speed LOW IDLE 1

Control lever position degrees: 11...19

Testina: Speed mcn Minimum rack trave: 7.20 : 350 Speed rom Rack travel in mm : 5.60...5.80

CONSTANT REGULATION Speed rpm : 325...520

TORQUE CONTROL Dimension a mm : ? Torque control curve - 1st version 1st speed rom : 900 Rack travel in m: 15.80...15.90 : 650 2nd speed rpm

Rack travel in m: 14.00...14.40 3rd speed rpm : 1000

Rack travel in m: 15.30...15.50

Aneroid/Altitude Compensator Test

1st version Setting Speed rom Pressure

hPa : 1500 Rack travel mm : 15.80...15.90

: 900

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50 2nd pressure hPa : 335 Rack travel in m: 10.10...10.20

3rd pressure hPa : 845

Rack travel in m: 13.60...14.00

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 650 Del.quantity cm3/ : 211.0...217.0 1000 s: (208.0...220.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 91.0...95.0 1000 s: (89.0...97.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.30

rpm : 1050...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 135.0...175.0 1000 s: (130.0...180.0) Rack travel in mm : 10.90...11.90

LOW IDLE

Speed man

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 27.0...33.0 1000 s: (25.0...35.0)

cm3 : 8.00

Spread 1000 s: (12.00)

Remarks:

: C.D.C. # 3916629

Start-of-delivery mark = 5.5° after start of delivery cyl. 1.

Bow dimension:

Sliding-sleeve position = 37.0 mm

SOSCH INJ. PUMP TEST SPECIFICATIONS : 4.80...4.90 : (4.75...4.95) Prestroke mm Note remarks Rack travel in mm : 15.00...16.00 Test sheet : 6-2-4-1-5-3 : MAN 11,9 t6 Firing order Edition : 31.01.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 736 822 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6P120A720/3LS7209 Time to cyl. no. : 6 EP type number : 0 412 726 837 BEGINNING OF DELIVERY DIFFERENCE Governor : RQV300...1000PA962-4 Governor design. betw. rack trav. m: 3.90...4.10 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25 : 0 421 815 293 Governer no. Customer-spec. information Customer : MAN BASIC SETTING Engine : D2866LU04 1st speed rpm: 750 1st version kW : 309.0 Rack travel in mm : 12.70...12.80 : 2000 Rated speed Del.quantity cm3/: 28.6...28.8 TEST BENCH REQUIREMENTS 100 s: (28.3...29.1) Test oil inlet temp. °C : 38...42 cm3 : 0.5Spread Overflow valve 100 s: (0.9) : 1 419 992 198 rpm : 300.0 2nd speed Inlet press., bar: 1.50 Rack travel in mm: 4.3...4.7 Del.quantity cm3/: 2.0...2.6 Test nozzle holder 100 s: (1.7...2.9) : 1 638 901 105 assembly Spread cm3 : 0.8100 s: (1.2) Opening 1 pressure, bar : 207...210 (B) Setting of injection pump with governor Orifice plate diameter mm GUIDE SLEEVE TRAVEL : 0,8 1st speed rpm : 1045 travel mm : 8.40...8.60 Test lines : 1 680 750 015 2nd speed rpm : 300 travel mm 2.10...2.30 3rd speed Outside diameter : 500 rpm x Wall thickness : 4.10...4.50 travel mm x Length mm : 6.00X1.50X600 : 900 4th speed rpm : 6.50...6.90 travel mm (A) Injection pump setting values 5th speed : 1350 rpm Insp. values in parentheses : 13.00...14.00 travel mm Set equal delivery quant. per values GUIDE SLEEVE POSITION Control-lever position BEGINNING OF DELIVERY Degree: -1 Test pressure, bar: 25...27

rpm : 1140

Speed

Rack travel in mm : 15.20...17.80 1/min: 1000 Speed FULL LOAD DELIV. AT FULL LOAD STOP 1st pressure hPa : -Rack travel in m: 8.40...8.60 2nd pressure hPa : 200 1st version Speed rpm : 750 Rack travel in m: 8.70...8.80 Aneroid pressure h: 1300 3rd pressure hPa : 660 Del.quantity : 280.0...201.0) Rack travel in m: 11.40...11.60 : 5.00 START CUT-OUT 1000 : (9.00) Speed 1/min : 220 (240) RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 285...293 1st version Aneroid pressure h: 1300 Testing: Speed rpm : 1000 Del.quantity cm3/: 275.0...281.0 1000 s: (272.0...284.0) 1st rack travel in: 12.00 rpm : 1040...1050 Speed 2nd rack travel in: 4.00 Aneroid pressure h: 1300 rpm : 1125...1155 Speed Speed : 900 והמה Del.quantity cm3/: 286.0...292.0 1000 s: (283.0...295.0) 4th rack travel in: 1300 Speed rom : 0.00...1.00Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 166.0...168.0 1000 s: (163.0...171.0) LOW IDLE 1 Control Lever position degrees: 239...247 Testina: Speed rom : 200 BREAKAWAY Minimum rack trave: 6.00 Sneed rom : 300 1st version Rack travel in mm : 4.40...4.60 1mm rack travel less than CONSTANT REGULATION full load rack tr: 12.00 Speed rpm : 320...440rpm : 1040...1050 Speed TORQUE CONTROL STARTING FUEL DELIVERY Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 750 Rack travel in m: 12.70...12.80 Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0) rpm : 900 2nd speed Rack travel in m: 13.10...13.30 3rd speed rpm : 1000 LOW IDLE Rack travel in m: 13.00...13.20 rpm : 300 Speed Rack travel in mm : 4.30...4.70 Aneroid/Altitude Del.quantity cm3/: 20.0...26.0 Compensator Test 1000 s: (17.0...29.0) Spread cm3 : 8.00 1st version 1000 s: (12.00) Setting Speed : 1000 Remarks: rpm Pressure hPa : 1300 : MAN-NR. 3-7129 Rack travel mm : 13.00...13.20 Setting and blocking of pointer of Measurement start-of-delivery sensor on cyl. 6

H06

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.80...4.90 : (4.75...4.95) Prestroke mm Note remarks Rack travel in mm : 15.00...16.00 Test sheet : MAN 11,9 z : 6-2-4-1-5-3 firing order Edition : 31.01.92 Replaces Test oil : ISD-4113 Phasing : 0-60-120-180-240-300 : 0 402 736 827 Combination no. Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6P120A720/3LS7251 Time to cyl. no. : 6 EP type number : 0 412 726 860 BEGINNING OF DELIVERY DIFFERENCE Governor Governor design. : RQV300...1000PA960-6 betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference CS: 1.75...3.25 : 0 421 815 306 Governer no. Customer—spec. information Customer : MAN BASIC SETTING : D2863LF06 Engine 1st speed rpm: 900 1st version kW : 309.0 Rack travel in mm : 13.50...13.60 Rated speed : 2000 Del.quantity cm3/: 28.5...28.7 TEST BENCH REQUIREMENTS 100 s: (28.2...29.0) Test oil inlet temp. °C : 38...42 cm3 : 0.5Spread Overflow valve 100 s: (0.9) : 1 419 992 198 2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.6 Del.quantity cm3/ : 2.9...3.5 Inlet press., bar: 1.50 Test nozzle holder 100 s: (2.6...3.8) : 1 688 901 105 assembly Spread cm3 : 0.8100 s: (1.2) Openina : 207...210 pressure, bar (B) Setting of injection pump with governor Orifice plate diameter mm : 0,8 GUIDE SLEEVE TRAVEL 1st speed rpm : 1055 : 10.40...10.60 travel mm Test Lines : 1 680 750 015 2nd speed 300 rpm 1.90...2.30 travel mm Outside diameter 3rd speed 500 rpm : 3.50...4.10 : 750 x Wall thickness travel mm : 6.00x1.50x600 x Length mm 4th speed rpm : 6.80...7.20 travel mm (A) Injection pump setting values : 1350 5th speed rpm Insp. values in parentheses : 13.00...14.00 travel mm Set equal delivery quant. per values GUIDE SLEEVE POSITION Control-lever position BEGINNING OF DELIVERY Degree: -1 rpm : 1100 Test pressure, bar: 25...27 Speed

Rack travel in mm : 15.20...17.80 Measurement FULL LOAD DELIV. AT FULL LOAD STOP 1/min: 900 Speed 1st pressure hPa : -1st version rpm : 900 Speed Rack travel in m: 8.80...9.00 Aneroid pressure h: 1200 2nd pressure hPa : 220 Del.quantity : 285.0...237.0 Rack travel in m: 9.40...9.50 : (282.0...290.0) : 5.00 : (9.00) 1000 3rd pressure hPa : 720 Spread cm3 Rack travel in m: 11.60...11.80 1000 START CUT-OUT RATED SPEED Speed 1/min: 220 (240) 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 296...304 Testing: 1st version 1st rack travel in: 12.10 Aneroid pressure h: 1200 rpm : 1040...1050 Speed Speed : 1000 rom Del.quantity cm3/: 261.0...265.0 1000 s: (258.0...268.0) 2nd rack travel in: 4.00 : 1140...1170 Speed rpm 4th rack travel in: 1300 Aneroid pressure h: 1200 rpm : 0.00...1.00Speed Speed rpm Del.quantity cm3/: 271.0...277.0 1000 s: (268.0...280.0) LOW IDLE 1 Control lever Aneroid pressure h: rpm : 500 position degrees: 251...259 Speed Del.quantity cm3/: 166.0...168.0 1000 s: (163.0...171.0) Testing: Speed : 100 rpm Minimum rack trave: 6.50 Speed rpm : 300 Rack travel in mm : 5.30...5.50 BREAKAWAY 1st version CONSTANT REGULATION 1mm rack travel less than rpm : 320...440 Speed full load rack tr: 12.10 TORQUE CONTROL rpm : 1040...1050 Speed Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 900 Rack travel in m: 13.50...13.60 : 1000 2nd speed rpm Speed : 100 rpm Rack travel in m: 13.00...13.20 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) 3rd speed rpm : 750 Rack travel in m: 12.70...12.90 4th speed rpm : 400 LOW IDLE Rack travel in m: 11.50...11.70 Speed rpm : 300 Aneroid/Altitude Rack travel in mm : 5.20...5.60 Del.quantity cm3/ : 29.0...35.0 Compensator Test 1000 s: (26.0...38.0) Spread cm3 : 8.001000 s: (12.00) 1st version Settina Speed : 900 Remarks: rpm Pressure hPa : 1200 : MAN-NR. 3-7205

Rack travel mm

: 13.50...13.60

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MAN 11,9 z1 : 31.01.92 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 736 828

Injection pump

Pump designation: PESSP120A720/3LS7251

EP type number : 0 412 726 860

Governor

Governor design. : RQV300...1000PA960-7

: 0 421 815 307 Governer no.

Customer-spec. information Customer : MAN

: D2866LF09 Engine

: 309.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 419 992 198

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm : (4.75...4.95)

Rack travel in mm : 15.00...16.00

Firing order

: 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

bety, rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference \* CS : 1.75...3.25

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.90...14.00

Del.guantity cm3/: 29.9...30.1

100 s: (29.6...30.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.6 Del.quantity cm3/ : 2.9...3.5

100 s: (2.6...3.8)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1055 1st speed

travel mm : 10.40...10.60

2nd speed man

: 300 : 2.00...2.40 travel mm

: 450 3rd speed rpm

: 3.30...4.00 travel mm

4th speed : 750 rpm

: 6.80...7.20 travel mm

5th speed : 1350 rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1100 Speed

Rack travel in mm: 15.20...17.80 Measurement FULL LOAD DELIV. AT FULL LOAD STOP Speed  $1/\min : 900$ 1st version 1st pressure hPa : -Rack travel in m: 9.00...9.20 rpm : 900 Speed Aneroid pressure h: 1200 2nd pressure hPa : 220 Del.quantity : 299.0...304.0) Rack travel in m: 9.40...9.50 3rd pressure hPa : 720 Rack travel in m: 11.50...11.80 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min: 220 (240) 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 296...304 Testing: 1st version 1st rack travel in: 12.40 Aneroid pressure h: 1200 rpm : 1040...1050 : 1000 Speed Speed rpm Del.quantity cm3/: 271.0...277.0 1090 s: (268.0...280.0) 2nd rack travel in: 4.00 Speed rom : 1140...1170 4th rack travel in: 1300 Aneroid pressure h: 1200 Speed rpm : 0.00...1.00: 750 Speed rpm Del.quantity cm3/: 281.0...287.0 1000 s: (278.0...290.0) LOW IDLE 1 Control Lever Aneroid pressure h: position degrees: 251...259 rpm : 500 Speed Del.quantity cm3/: 168.0...170.0 Testing: 1000 s: (165.0...173.0) Speed : 100 rpm Minimum rack trave: 6.50 Speed rpm BREAKAWAY Rack travel in mm : 5.30...5.50 1st version CONSTANT REGULATION 1mm rack travel less than rpm : 300...420 Speed full load rack tr: 12.40 TORQUE CONTROL Speed rpm : 1040...1050 Dimension a mm :? Torque control curve - 1st version STARTING FUEL DELIVERY rpm : 900 1st speed Rack travel in m: 13.90...14.00 : 1000 2nd speed : 100 rpm Speed rpm Rack travel in m: 13.40...13.60 Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0) 3rd speed rpm : 750 Rack travel in m: 12.90...13.10 4th speed rpm : 400 Rack travel in m: 12.00...12.30 LOW IDLE Speed rpm : 300 Aneroid/Altitude Rack travel in mm : 5.20...5.60 Del.quantity cm3/: 29.0...35.0 1000 s: (26.0...38.0) Compensator Test cm3 : 8.00 Spread 1st version 1000 s: (12.00) Setting Speed : 900 Remarks: nom hPa : 1200 Pressure : MAN-NR. 3-7207

Rack travel mm

: 13.90...14.00

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

BOSCH INJ. PLMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.20...5.30 Prestroke mm (5.15...5.35) Test sheet Edition : MB 12,0 d : 13.12.89 Rack travel in mm : 9.09...12.00 : 4.11.88 : 6-2-4-1-5-3 Replaces Firing order Test oil : ISO-4113 Combination no. : 0 402 746 843 Phasing : 0-60-120-180-240-300 Injection pump Pump designation : PES6P120A720LS7161 Tolerance + - ° : 0.50 (0.75) : 0 412 726 817 EP type number Governor Time to cyl. no. : 6 Governor design. : RG300/1050PA897 : 0 421 801 452 BASIC SETTING Governer no. Customer-spec. information 1st speed rpm: 600 : DAIMLER-BENZ Customer Rack travel in mm : 14.10...14.30 : 0M447 A Engine Del.quantity cm3/: 20.1...20.3 : 213.0 1st version kW : 2100 Rated speed 100 s: (19.8...20.6) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 300.02nd speed Overflow valve Rack travel in mm: 6.0...6.4 : 1 417 413 025 Del.quantity cm3/ : 1.4...2.0 100 s: (1.1...2.3) Inlet press., bar: 1.50 cm3 : 0.6Spread 100 s: (1.2) Overflow. quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Degree: -2 Test nozzle holder assembly : 1 688 901 019 rpm : 650 Speed Rack travel in mm : 19.20...20.80 Openina : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar Orifice plate 1st version : 0,8 diameter mm Speed rpm : 600 Aneroid pressure h: 680 : 201.0...203.0 Del.quantity 1000 : (198.0...206.0) Test lines : 1 680 750 067 : 5.00 Spread cm3 : (9.00) Outside diameter 1000 x Wall thickness : 6.00x1.50x1000 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values rpm

Rack travel in mm : 20.0

Testing: 1st rack travel in: 12.50 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1160...1190 4th rack travel in: 1250 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 6.2 Testing: Speed : 200 rpm Minimum rack trave: 7.70 Speed : 300 rom Rack travel in mm : 6.00...6.40 Rack travel in mm : 2.00 Speed rpm : 380...420 TORQUE CONTROL Dimension a mm Torque control curve - 1st version : 1050 1st speed rpm Rack travel in m: 13.50...13.70 rpm : 750 2nd speed Rack travel in m: 14.80...15.00 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 680 Pressure Rack travel mm : 14.10...14.30 Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 2nd pressure hPa : 400 Rack travel in m: 13.10...13.30 3rd pressure hPa : 800 Rack travel in m: 14.20...14.30 \* 4th pressure hPa : -Rack travel in m: 11.30...11.60 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1200 : 1050 Speed rpm Del.quantity cm3/: 193.0...195.0 1000 s: (190.0...198.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1200 Speed : 750 rpm Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 144.0...146.0 1000 s: (141.0...149.0) cm3 : 8.00Spread 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.50

Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.80...4.90 Prestroke mm : (4.75...4.95) Rack travel in mm : 12.50...13.50 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : RVI 12,0 i : 24.01.92 : 3.6.91 Edition Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 402 746 878 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6P120A320RS7191 : 0 412 726 828 EP type number 1st speed rpm: 600 Governor : RQV275...1000PA927 Governor design. Rack travel in mm : 14.00...14.10 : 0 421 813 808 Governer no. Del.quantity cm3/: 28.7...28.9 Customer-spec. information Customer : RVI 100 s: (28.4...29.2) Engine : MIDR 06-35-40 cm3 : 0.5Spread 1st version kW : 314.0 100 s: (0.9) Rated speed : 2000 rpm : 275.0 2nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 4.5...4.9 Del.quantity cm3/ : 2.0...2.6 100 s: (1.7...2.9) Test oil inlet temp. °C : 38...42 Spread cm3 : 0.8100 s: (1.2) Overflow valve : 1 417 413 025 (B) Setting of injection pump with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed rpm : 275 : 1 688 901 105 assembly : 1.10...1.50 travel mm 2nd speed rpm : 500 Opening : 3.60...4.20 travel mm : 700 pressure, bar : 207...210 3rd speed rpm 5.50...5.90 travel mm 1000 Orifice plate 4th speed rom diameter mm : 0,8 7.60...7.80 travel mm : 1400 5th speed rpm travel mm : 11.00...12.00 Test lines : 1 680 750 089 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 Speed rpm : 1060 Rack travel in mm : 15.20...17.80 : 8.00x2.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values 1st version Speed rpm : 600 BEGINNING OF DELIVERY Aneroid pressure h: 900 : 287.5...289.5 Test pressure, bar: 25...27 Del.quantity

1000 : (284.5...292.5)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 300...308

Testing:

1st rack travel in: 13.00

Speed rpm : 1065...1075 2nd rack travel in: 10.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 245...253

Testing:

Speed : 200 FOR Minimum rack trave: 5.90 : 275 rpm

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

Speed rpm : 330...430

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rom Pressure hPa : 900

Rack travel mm : 14.00...14.10

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.50...9.90 2nd pressure hPa : 520 Rack travel in m: 13.30...13.40 3rd pressure hPa : 200

Rack travel in m: 10.60...11.00

START CUT-OUT

1/min: 225 (245) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 1000

H17

Del.quantity cm3/ : 263.5...266.5

1000 s: (260.5...269.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 167.0...169.0

1000 s: (164.0...172.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.00

Speed rpm : 1045...1075

STARTING FUEL DELIVERY

Speed : 100 rom

Del.quantity cm3/: 156.0...186.0

1000 s: (152.0...190.0)

LOW IDLE

Speed rpm : 275

Rack travel in mm : 4.50...4.90 Del.quantity cm3/: 20.0...26.0

1000 s: (17.0...29.0)

Spread cm3 : 8.00

1000 s: (12.00)

:

Remarks:

BOSCH INJ. FUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.20...5.30 Prestroke mm : (5.15...5.35) Test sheet : MB 11,7 i Edition : 01.02.90 Rack travel in mm : 9.00...12.00 Replaces : 24.11.89 : 6-2-4-1-5-3 Firing order Test oil : ISO-4113 Combination no. : 0 402 746 881 Phasing : 0-60-120-180-240-300 Injection pump Pump designation : PES6P120A720LS7195 Tolerance + - \* : 0.50 (0.75) EP type number : 0 412 726 829 Governor Time to cyl. no. : 6 Governor design. : RQ300/1100PA805-1 : 0 421 801 505 Governer no. BASIC SETTING Customer-spec. information rpm: 1100 1st speed Customer : MERCEDES-BENZ Rack travel in mm : 13.40...13.50 Engine : 0M447hA Del.quantity cm3/: 19.7...19.9 1st version kW : 206.0 Rated speed : 2200 100 s: (19.4...20.2) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 300.02nd speed Rack travel in mm : 5.8...6.2 Del.quantity cm3/ : 1.0...1.6 100 s: (0.7...1.9) Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 cm3 : 0.8 Spread 100 s: (1.2) Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 019 rpm : 650 assembly Speed Rack travel in mm : 19.20...20.80 Opening : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version Speed rpm : 1100 Aneroid pressure h: 750 diameter mm : 0,8 Del.quantity : 197.0...199.0 Test Lines : 1 680 750 067 1000 : (194.0...202.0) : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness : 6.00x1.50x1000 x Length mm RATED SPEED 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point:

Rack travel in mm : 20.0

per values

Testing: 1st rack travel in: 12.40 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1220...1250 4th rack travel in: 1350 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring mqr: Rack travel in mm: 5.9 Testing: : 100 Speed rpm Minimum rack trave: 7.50 : 300 Speed rpm Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00 Speed rpm : 380...420 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 8.80...9.00 Rack travel mm Measurement Speed  $1/\min : 500$ 1st pressure hPa : 250 Rack travel in m: 8.90...9.10
2nd pressure hPa : 500
Rack travel in m: 11.50...11.70 START CUT-OUT Speed 1/min : 220 (240) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 Speed rpm : 600 Del.quantity cm3/: 192.0...195.0 1000 s: (188.0...198.0) cm3 : 8.00 Spread 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.40

Speed : 1145...1160 man

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0

1000 s: (146.0...174.0)

Remarks:

**APPLICATION** 

Omnibus

H19

Spread

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 129.0...131.0

cm3 : 8.00

1000 s: (12.0)

1000 s: (126.0...134.0)

BOSCH INJ. PUMP TEST SPECIFICATIONS EEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks Prestroke mm : 5.50...5.60 : (5.45...5.65) : MB 11,8 t : 20.12.91 Test sheet Edition Rack travel in mm : 20.00...21.00 : 29.11.91 Replaces : 6-2-4-1-5-3 Firing order Test oil : ISO-4113 Combination no. : 0 402 746 914 Phasing : 0-60-120-180-240-300 Injection pump Pump designation : PES6P120A720LS7238 : 0.50 (0.75) Tolerance + - ° EP type number : 0 412 726 852 Governor Time to cyl. no. : 6 Governor design. : RQ300/1100PA1008 Governer no. : 0 421 801 591 **EASIC SETTING** Customer-spec, information 1st speed rpm : 600 Customer : MERCEDES-BENZ Rack travel in mm : 14.00...14.20 Engine : 0M447 hLA Del.guantity cm3/: 21.3...21.5 1st version kW : 220.0 : 2200 Rated speed 100 s: (21.0...21.8) TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 300.02nd speed Overflow valve Rack travel in mm: 6.2...6.8 : 1 417 413 025 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) cm3 : 0.8 Inlet press., bar: 1.50 Spread 100 s: (1.2) **Overflow** quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 105 rpm : 650 assembly Speed Rack travel in mm : 19.20...20.80 **Opening** pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 600 Aneroid pressure h: 600 ; 213.0...215.0 Del.quantity 1000 : (210.0...218.0) Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_\_

Setting point: Speed rpm : 650 Rack travel in mm : 20.0

cm3

: 5.00

1000 : (9.00)

Spread

RATED SPEED

1st version

Testing: 1st rack travel in: 13.60 Speed rpm : 1145...1160 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed man Rack travel in mm: 6.5 Testing: Speed mon : 200 Minimum rack trave: 8.40 : 300 Speed rom Rack travel in mm : 6.20...6.80 Rack travel in mm: 2.00 Speed rpm : 370...410 Aneroid/Altitude Compensator Test 1st version Secting Speed : 600 rpm hPa : 600 Pressure : 14.00...14.20 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 200 Rack travel in m: 13.10...13.30 2nd pressure hPa : 400 Rack travel in m: 14.50...14.70 3rd pressure hPa : 800 Rack travel in m: 15.10...15.30 4th pressure hPa : 890 Rack travel in m: 15.40...15.60 5th pressure hPa : -Rack travel in m: 11.50...11.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rpm : 1100 Speed Del.quantity cm3/: 229.0...232.0 1000 s: (226.0...235.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1400 008: mgn Speed Del.quantity cm3/: 238.0...242.0 1000 s: (235.0...245.0) Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 147.0...149.0 1000 s: (144.0...152.0) Spread cm3: 8.00 1000 s: (12.0)

### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.60 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm: 100 Rack travel in mm: 11.50...11.80

Remarks:

H21

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 11,8 u 1 Edition : 20.12.91 Replaces : 26.7.91

Test oil : ISO-4113

Combination no. : 0 402 746 916

Injection pump

Pump designation : PES6P120A72CLS7237

: 0 412 726 851 EP type number

Governor

Governor design. : R0300/1100PA1010

Governer no. : 0 421 801 596

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 hA

: 184.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.20...12.40

Del.guantity cm3/: 16.0...16.2

100 s: (15.7...16.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.8...6.4 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 550

Del.quantity : 160.0...162.0

1000 : (157.0...165.0) : 5.00

cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm : 20.0 Testing: ist rack travel in: 13.00 : 1145...1160 Speed rpm 2nd rack travel in: 4.00 speed rpm : 1220...1250 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 6.1 Testing: Speed : 200 rpm Minimum rack trave: 8.00 Speed : 300 rom Rack travel in mm : 5.80...6.40 Rack travel in mm : 2.00 Speed : 390...430 non Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm : 550 Pressure hPa : 12.20...12.40 Rack travel TITT Measurement Speed 1/min: 600 1st pressure hPa : 220 Rack travel in m: 11.50...11.70 2nd pressure hPa : 300 Rack travel in m: 11.80...12.00 3rd pressure hPa : 800 Rack travel in m: 12.40...12.60 4th pressure hPa : 1100 Rack travel in m: 12.80...13.00 5th pressure hPa : ---Rack travel in m: 11.10...11.40 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1900 Speed : 1100 rpm Del.quantity cm3/: 210.0...213.0 1000 s: (207.0...216.0) cm3 Spread : 8.00 1000 s: (12.0)

Aneroid pressure h: 1900 : 800 Speed rpm Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: -Speed : 500 rpm Dei.quantity cm3/: 128.0...130.0 1000 s: (125.0...133.0) cm3 : 8.00 Spread 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.00 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

H23

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.50...5.60 Prestroke mm : (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-2-4-1-5-3 Test sheet : MB 11,8 t 1 23.10.91 26.7.91 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 746 917 : 0-60-120-180-240-300 Phasing Injection pump Pump designation : PES6P120A7Z0LS7238 Tolerance + - ° : 0.50 (0.75) EP type number : 0 412 726 852 Governor Time to cyl. no. : 6 Governor design. : RQ300/1100PA1010-1 BASIC SETTING : 0 421 801 597 Governer no. Customer-spec. information 1st speed rpm: 600 Customer : MERCEDES-BENZ Rack travel in mm : 14.00...14.20 Engine : 0M447 hLA Del.quantity cm3/: 21.3...21.5 : 220.0 : 2200 1st version kW Rated speed 100 s: (21.0...21.8) TEST BENCH REQUIREMENTS Spread cm3 : 0.5100 s: (0.9) Test oil inlet temp. °C : 38...42 rpm : 300.0 2nd speed Rack travel in mm : 6.0...6.5 Del.quantity cm3/ : 1.6...2.2 Overflow valve : 1 417 413 025 100 s: (1.3...2.5) cm3 : 0.8Inlet press., bar: 1.50 Spread 100 s: (1.2) Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-Lever position Test nozzle holder Degree: -2 : 1 688 901 105 assembly Speed rpm : 600 Rack travel in mm : 19.20...20.80 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 rpm : 600 Speed Aneroid pressure h: 600 Del.quantity : 213.0...215.0 1000 : (210.0...218.0) : 1 680 750 075 Test Lines : 5.00 Spread cm3

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_

Setting point: Speed rpm : 600 Rack travel in mm : 20.0

1st version

1000 : (9.00)

Testing:

1st rack travel in: 13.60

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1245...1275 Speed

4th rack travel in: 1300

Speed rom : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 6.3

Testing:

Speed : 200 LDW.

Minimum rack trave: 8.20

: 300 Speed rpm.

Rack travel in mm : 6.00...6.60

Rack travel in mm : 2.00

Speed nom : 370...410

Aneroid/Altitude Compensator Test

1st version

Satting

Speed : 600 **Libut** 

hPa : 600 Pressure

: 14.00...14.20 Rack travel mm

Measurement

Speed 1/min : 600

1st pressure hPa : 250

Rack travel in m: 12.40...12.60

2nd pressure hPa : 400

Rack travel in m: 13.60...13.80

3rd pressure hPa : 800

Rack travel in m: 15.10...15.30

4th pressure hPa : -

Rack travel in m: 11.70...12.00

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1400

Speed rpm : 1100

Del.quantity cm3/: 229.0...232.0 1000 s: (226.0...235.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

: 500 Speed rom

H25

Del.quantity cm3/: 154.0...156.0 1000 s: (151.0...159.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.60 speed rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

BOSCH INJ. FUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.50...5.60 Prestroke mm : (5.45...5.65)

Rack travel in mm: 20.00...21.00

Firing order: 6-2-4-1-5-3 : MB 11,8 t 2 : 31.01.92 : 26.7.91 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 746 918 Phasing : 0-60-120-180-240-300 Injection pump Pump designation : PES6P120A720LS7238 Tolerance + - \* : 0.50 (0.75) EP type number : D 412 726 852 Governor Time to cyl. no. : 6 Governor design. : RQ300/1100PA1013 Sovemer no. : 0 421 801 599 BASIC SETTING Customer-spec. information 1st speed rpm: 600 Customer : MERCEDES-BENZ Rack travel in mm : 14.00...14.20 : 0M447 hLA Engine Del.quantity cm3/: 21.3...21.5 : 220.0 1st version kW : 2200 100 s: (21.0...21.8) Rated speed TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 rpm : 300.0 2nd speed Overflow valve Rack travel in mm: 6.0...6.6 : 1 417 413 025 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Inlet press., bar: 1.50 Spread cm3 : 0.8 100 s: (1.2) Overflow quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 assembly : 1 688 901 105 rpm : 600 Speed Rack travel in mm : 19.20...20.80 Opening : 207...210 pressure, bar FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 600 Aneroid pressure h: 600 Del.quantity : 213.0...215.0 1000 : (210.0...218.0) Test lines : 1 680 750 075 : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness : 8.00x2.50x1000 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. position degrees: 94...102

Setting point:

per values \_\_\_\_

Speed rpm : 600 Rack travel in mm : 20.0 Testing: 1st rack travel in: 13.60 Speed rpm : 1145...1160 2nd rack travel in: 4.00 Speed rpm : 1230...1260 4th rack travel in: 1350 rpm : 0.00...1.50 Speed LOW IDLE 1 Control lever position degrees: 69...77 Setting point w/out bumper spring Speed rpm : 300 Speed rpm : 300 Rack travel in mm : 6.3 Testina: Speed rpm Minimum rack trave: 8.2J rpm : 300 Speed Rack travel in mm : 6.00...6.60 Rack travel in mm : 2.00 : 380...420 Speed rpm Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed npm hPa : 600 Pressure : 14.00...14.20 Rack travel mm Measurement  $1/\min : 600$ Speed 1st pressure hPa : 250 Rack travel in m: 12.20...12.40 2nd pressure hPa : 400 Rack travel in m: 13.60...13.80 3rd pressure hPa : 800 Rack travel in m: 14.20...14.40 4th pressure hPa : -Rack travel in m: 11.50...11.80 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1400 rpm : 1100 Speed Del.quantity cm3/: 229.0...232.0 1000 s: (226.0...235.0)

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1400 Speed rpm : 700 Del.quantity cm3/: 233.0...237.0 1000 s: (230.0...240.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 148.0...150.0 1000 s: (145.0...153.0) Spread cm3 : -1000 s: (12.0)

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.60 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

4

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS BEGINNING OF DELIVERY Test pressure, bar: 25...27 Note remarks : 5.20...5.30 Prestroke mm Test sheet : MB 11,8 u 2 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 6-2-4-1-5-3 Edition : 18.12.91 Replaces : 26.7.91 Test oil : ISO-4113 Combination no. : 0 402 746 919 Phasing : 0-60-120-180-240-300 Injection bumb Pump designation : PES6P120A720LS7237 Tolerance + - ° : 0.50 (0.75) EP type number : 0 412 726 851 Governor Time to cyl. no. : 6 Governor design. : RQZ^7/1100PA1613-1 : 0 4<1 801 603 Governer no. BASIC SETTING Customer-spec. information 1st speed rpm: 600 Customer : MERCEDES-BENZ Rack travel in mm : 12.00...12.20 Engine : 0M447 hA Del.quantity cm3/: 16.3...16.5 : 184.0 1st version kW 100 s: (16.0...16.8) Rated speed : 2200 TEST BENCH REQUIREMENTS Spread cm3 : 0.5Test oil 100 s: (0.9) inlet temp. °C : 38...42 2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2 Overflow valve : 1 417 413 025 100 s: (1.3...2.5) Inlet press., bar: 1.50 Spread cm3 : 0.8100 s: (1.2) Overflow. quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -2 : 1 688 901 105 rpm : 600 assembly Speed Rack travel in mm: 19.20...20.80 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version diameter mm : 0,8 Speed rpm : 600 Aneroid pressure h: 550 Del.quantity : 163.0...165.0 Del.quantity : 163.0...168.0) Test lines : 1 680 750 075 Outside diameter 1000 : (9.00)x Wall thickness : 8.00x2.50x1000 x Longth rim RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Setting point:

Speed

rpm Rack travel in mm: 20.0

per values \_\_\_

Testing: 1st rack travel in: 12.30 rpm : 1145...1160 Speed 2nd rack travel in: 4.00 rpm : 1220...1250 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 Testing: Speed rpm Minimum rack trave: 7.80 Speed rpm : 300 Rack travel in mm : 5.60...6.20 Rack travel in mm : 2.00 : 370...410 Speed rpm Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : 550 Rack travel mm : 12.00...12.20 Measurement Speed 1/min : 600 1st pressure hPa : 300 Rack travel in m: 11.60...11.80 2nd pressure hPa : 800 Rack travel in m: 12.20...12.40 3rd pressure hPa : 1100 Rack travel in m: 12.60...12.80 4th pressure hPa : -Rack travel in m: 11.40...11.70 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1700 Speed rpm : 1100 Del.quantity cm3/ : 199.0...202.0 1000 s: (196.0...205.0) Spread cm3 : 8.00 1000 s: (12,0) Aneroid pressure h: 1700 Speed : 800 rpm

Del.quantity cm3/: 203.0...207.0 1000 s: (200.0...210.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 139.0...141.0 1000 s: (136.0...144.0) Spread cm3 : 8.00 1000 s: (12.0)

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.30 Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

:

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 4.85...4.95 Prestroke mm : (4.80...5.00) Note remarks Rack travel in mm : 13.00...14.00 Test sheet : RVI 6,2 L : 1-5-3-6-2-4 Firing order Edition : 20.12.91 : 29.11.91 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 746 924 Tolerance + - ° : 0.50 (0.75) Injection pump Pump designation : PES6P110A320RS7243 Time to cyl. no. : 1 : 0 412 716 806 EP type number BEGINNING OF DELIVERY DIFFERENCE Governor : RQV275...1250PA942-2 Governor design. betw. rack trav. m: 5.60...5.80 & maximum rack tra: 20.0...21.0 Difference \* CS : 1.00...2.50 : D 421 815 288 Governer no. Customer spec. information Customer : RVI BASIC SETTING Engine : MIDRO5-06-26 L/2 1st speed rpm: 1250 1st version kW : 132.5 Rack travel in mm : 13.70...13.80 : 2500 Rated speed Del.quantity cm3/: 14.0...14.2 TEST BENCH REQUIREMENTS 100 s: (13.7...14.4) Test oil inlet temp. °C : 38...42 Spread cm3 : 0.4Overflow valve 100 s: (0.7) : 1 417 413 C25 2nd speed rpm : 275.0
Rack travel in mm : 5.9...6.3
Del.quantity cm3/ : 2.3...2.8 Inlet press., bar: 1.50 Test nozzle holder 100 s: (2.0...3.0) : 1 688 901 101 assembly Spread cm3 : 0.4100 s: (0.7) Opening : 207...210 pressure, bar (B) Setting of injection pump with governor Orifice plate diameter mm : 0,6 GUIDE SLEEVE TRAVEL 1st speed : 1320 rpm : 9.70...9.90 travel mm Test lines : 1 680 750 008 : 275 2nd speed rpm : 0.90...1.10 travel mm Outside diameter 3rd speed : 600 rpm x Wall thickness : 4.20...4.60 travel mm x Length mm : 6.00x2.00x600 1000 4th speed rpm : 7.00...7.40 travel mm (A) Injection pump setting values : 1600 5th speed rpm Insp. values in parentheses : 13.00...14.00 travel mm Set equal delivery quant. per values GUIDE SLEEVE POSITION Control-lever position BEGINNING OF DELIVERY Degree: -1 rpm : 1470 Test pressure, bar: 25...27 Speed

Rack travel in mm : 8.80...11.40 Speed 1/min: 1250 1st pressure hPa : -Rack travel in m: 10.80...11.00 FULL LOAD DELIV. AT FULL LOAD STOP 1st version 2nd pressure hPa : 300 rpm : 1250 Speed Rack travel in m: 12.00...12.10 Aneroid pressure h: 1000 3rd pressure hPa : 180 Del.quantity : 140.0...142.0 Rack travel in m: 11.20...11.60 1000 : (137.5...144.5) : 4.00 Spread cm3 START CUT-OUT 1000 : (7.50) 1/min: 200 (220) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 276...284 1st version Ameroid pressure h: 1000 Testing: rpm : 650 Del.quantity cm3/: 126.0...130.0 1000 s: (123.0...133.0) 1st rack travel in: 12.70 rpm : 1320...1330 Speed 2nd rack travel in: 4.00 Aneroid pressure h: -: 1465...1495 Speed rom 4th rack travel in: 1600 rpm : 0.00...1.00Speed LOW IDLE 1 1000 s: (14.0) Control lever position degrees: 219...227 **BREAKAWAY** Testing: Speed : 200 1st version rpm Minimum rack trave: 6.70 1mm rack travel less than Speed rpm : 275
Rack travel in mm : 6.00...6.20 full load rack tr: 12.70 rpm : 1320...1330 Speed CONSTANT REGULATION rpm : 350...480 Speed STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (96.0...124.0) Torque control curve - 1st version t speed rpm : 1250 Rack travel in m: 13.70...13.80 1st speed rpm : 650 2nd speed LOW IDLE Rack travel in m: 12.70...12.90 Speed rpm : 275
Rack travel in mm : 5.90...6.30
Del.quantity cm3/ : 23.0...28.0
1000 s: (20.5...30.5) 3rd speed rpm : 300 Rack travel in m: 12.00...12.40 Aneroid/Altitude Compensator Test cm3 : 4.50Spread 1000 s: (7.50) 1st version Remarks: Setting Speed : 1250 חסח : 1000 hPa Pressure : 13.70...13.80 Rack travel mm

Measurement

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : UNI 9.5 k Test sheet Edition : 18.12.91 Replaces Test oil : ISO-4113 : 0 402 746 926 Combination no. Injection pump Pump designation : PES6P120A720RS7224 EP type number : 0 412 726 840 Governor Governor design. : RQ275/1050PA1021 Governer no. : 0 421 801 623 Customer-spec. information Customer : IVECO-LINIC : 8460.41.721 Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 105 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0.8 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 5.10...5.20 Prestroke mm : (5.05...5.25) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasina : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1050 Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 18.8...19.0 100 s: (18.5...19.3) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 275.0 Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9) Spread cm3 : 3.8 100 s: (1.2) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1050 Speed Aneroid pressure h: 900 Del.quantity : 180.0...193.0) : 5.00 Spread cm3 (9.00)1000 RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm: 20.0 Testing: 1st rack travel in: 9.80 rpm : 1095...1110 Speed

2nd rack travel in: 4.00

Speed

rpm : 1170...1200

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 4.8

Testing:

: 100 Speed rom Minimum rack trave: 6.30

Speed rom : 275 Rack travel in mm : 4.70...4.90

TORQUE CONTROL

Dimension a mm :-

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 10.80...10.90

2nd speed rpm : 550

Rack travel in m: 10.80...11.00

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 850 Pressure hPa : 900

: 10.80...10.90 Rack travel mm

Measurement

Speed 1/min : 850

1st pressure hPa : -

Rack travel in m: 7.30...7.50

2nd pressure hPa : 430

Rack travel in m: 9.90...10.00 3rd pressure hPa : 250

Rack travel in m: 8.20...8.40

START CUT-OUT

Speed 1/min: 195 (215)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 550
Del.quantity cm3/: 220.0...226.0
1000 s: (217.0...229.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 126.0...128.0

1000 s: (123.0...131.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.80

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...180.0 1000 s: (146.0...184.0)

LOW IDLE

rpm : 275 Speed

Rack travel in mm : 4.60...5.00

Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

**APPLICATION** 

**Omnibus** 

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : UNI 9,5 k 1 Edition : 18.12.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 927

Injection pump

Pump designation : PESSP120A720RS7224

EP type number : 0 412 726 840

Governor

Governor design. : RQ275/1050PA1021-1

: 0 421 801 624 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8460.41.731 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20

: (5.05...5.25)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-2/.0-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 22.2...22.4

100 s: (21.9...22.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 275.0 2nd speed Rack travel in mm : 4.6...5.0 Del.quantity cm3/ : 2.0...2.6 100 s: (1.7...2.9)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed Aneroid pressure h: 900

Anerous Del.quantity 1000 : 222.0...224.0 : (219.0...227.0)

: 5.00 cm3

Spread 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 11.70 Speed rpm : 1095...1110

2nd rack travel in: 4.00

: 1190...1220 Speed rpm

106

4th rack travel in: 1350

rom : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm : 4.8

Testina:

: 100 Speed MCL Minimum rack trave: 6.30

Speed rpm : 275
Rack travel in mm : 4.70...4.90

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.70...12.80

2nd speed rpm : 550 Rack travel in m: 12.70...12.90

Aneroid/Altitude Compensator Test

1st version Settina

Speed riprii

hPa : 1200 Pressure

: 12.70...12.80 Rack travel mm

: 850

Measurement

Speed 1/min: 850

1st pressure hPa : -Rack travel in m: 7.30...7.50

2nd pressure hPa : 580

Rack travel in m: 11.30...11.40

3rd pressure hPa : 290

Rack travel in m: 8.60...9.00

START CUT-OUT

1/min : 195 (215) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 550
Del.quantity cm3/: 271.0...277.0
1000 s: (268.0...280.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 126.0...128.0 1000 s: (123.0...131.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.70

Speed : 1095...1110 roa

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...180.0 1000 s: (146.0...184.0)

LOW IDLE

Speed rpm : 275
Rack travel in mm : 4.60...5.00
Del.quantity cm3/ : 20.0...26.0
1000 s: (17.0...29.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

APPLICATION

Omnibus

EOSCH INJ. PUMP TEST SPECIFICATIONS : 4.35...4.95 Prestroke nm : (4.80...5.00) Note remarks Rack travel in mm : 13.00...14.00 : RVI 6,2 L 1 Test sheet : 1-5-3-6-2-4 Firing order Edition : 24.01.92 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 746 928 Tolerance + - \* : 0.50 (0.75) Injection pump Pump designation : PES6F110A320RS7243 Time to cyl. no. : 1 EP type number : 0 412 716 806 Governor BEGINNING OF DELIVERY DIFFERENCE Governor design. : RQV275...1175PA942-3 betw. rack trav. m: 5.40...5.60 & maximum rack tra: 20.0...21.0 Difference ° CS : 1.00...2.50 : 0 421 815 294 Governer no. Customer—spec. information Customer BASIC SETTING Engine : MIDRO6-06-26 M/2 rpm : 1175 1st speed 1st version kW : 132.5 Rack travel in mm : 14.00...14.10 : 2350 Rated speed Del.quantity cm3/: 15.2...15.4 TEST BENCH REQUIREMENTS 100 s: (14.9...15.6) Test oil inlet temp. °C : 38...42 cm3 : 0.4Spread Overflow valve 100 s: (0.7) : 1 417 413 025 2nd speed rpm : 275.0 Rack travel in mm : 5.4...5.8 Inlet press., bar: 1.50 Del.quantity cm3/: 2.2...2.7 100 s: (1.9...2.9) Test nozzle holder : 1 688 901 101 assembly Spread cm3 : 0.4100 s: (0.7) **Opening** pressure, bar : 207...210 (B) Setting of injection pump with governor Orifice plate diameter mm GUIDE SLEEVE TRAVEL : 0,6 1st speed rpm : 1250 : 9.10...9.30 travel mm Test lines : 1 680 750 008 2nd speed : 275 rpm : 0.90...1.10 travel mm 3rd speed Outside diameter man : 600 x Wall thickness : 4.20...4.60 travel mm : 6.00X2.00X600 x Length mm : 1000 4th speed rpm : 7.00...7.40 travel mm : 1600 (A) Injection pump setting values 5th speed mgn Insp. values in parentheses : 13.00...14.00 travel mm Set equal delivery quant. per values GUIDE SLEEVE POSITION Control-lever position BEGINNING OF DELIVERY Degree: -1 rpm : 1470

Speed

Test pressure, bar: 25...27

Rack travel in mm : 8.80...11.40 Measurement 1/min: 500 Speed FULL LOAD DELIV. AT FULL LOAD STOP 1st pressure hPa : -Rack travel in m: 10.50...10.70 1st version rpm : 1175 Speed 2nd pressure hPa : 420 Aneroid pressure h: 1000 Rack travel in m: 12.25...12.35 Del.quantity : 152.0...156.5) 3rd pressure hPa : 240 Rack travel in m: 11.20...11.40 1000 : (7.50)START CUT-OUT RATED SPEED Speed 1/min : 200 (220) FUEL DELIVERY CHARACTERISTICS 1st version Control Lever position degrees: 269...277 1st version Testing: Aneroid pressure h: 1000 1st rack travel in: 13.00 rpm : 700 Speed Del.quantity cm3/: 149.0...153.0 1000 s: (146.0...156.0) rpm : 1245...1255 Speed 2nd rack travel in: 4.00 Speed rpm : 1415...1445 4th rack travel in: 1550 Aneroid pressure h: rpm : 500 Speed rom : 0.00...1.00Speed Del.quantity cm3/: 79.0...81.0 1000 s: (76.5...85.5) LOW IDLE 1 Control lever position degrees: 219...227 BREAKAWAY Testina: 1st version : 200 Speed rpm 1mm rack travel less than Minimum rack trave: 6.20 rom full load rack tr: 13.00 Rack travel in mm : 5.50...5.70 rpm : 1245...1255 Speed Rack travel in mm: 2.00 STARTING FUEL DELIVERY CONSTANT REGULATION rpm : 350...480 Speed : 100 Speed rpm TORQUE CONTROL Del.quantity cm3/: 100.0...120.0 1000 s: (96.0...124.0) Dimension a mm : 1.70 Torque control curve - 1st version rpm : 1175 1st speed LOW IDLE Rack travel in m: 14.00...14.10 2nd speed rpm : 700 Rack travel in m: 13.10...13.30 Speed rpm : 275
Rack travel in mm : 5.40...5.80
Del.quantity cm3/: 22.0...27.0 3rd speed rpm : 300 Rack travel in m: 12.30...12.70 1000 s: (19.5...29.5) cm3 : 4.50Spread Aneroid/Altitude 1000 s: (7.50) Compensator Test Remarks: 1st version Setting Setting and blocking of pointer of Speed : 500 start-of-delivery sensor on cyl. 1 rpm hPa : 1000 Pressure start of delivery

Rack travel mm

: 14.00...14.10

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 16,0 c Edition : 20.12.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 748 804 Injection pump Pump designation : PES82120A920/4LS7217 : 0 412 728 803 EP type number Governor Governor design. : RQV325..1050PA848-30 : 0 421 315 289 Governer no. Customer-spec. information Customer : MACK Engine : ES9 502 : 368.0 1st version kW : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Overflow quantity min. 1/h: 160...170 Test nozzle holder : 1 688 901 103 assembly Opening : 207...210 pressure, bar Orifice plate diameter mm : 0,7 Test lines : 1 680 750 008 Outside diameter

Test lines : 1 680 750 008

Outside diameter
x Wall thickness
x Length mm : 6.00X2.00X600

(A) Injection pump setting values
 Insp. values in parentheses
 Set equal delivery quant.
 per values

BEGINNING OF DELIVERY

J10

Test pressure, bar: 22...24 : 3.55...3.65 Prestroke mm (3.50...3.70) Rack travel in mm : 9.00...12.00 : 1-2-7-8-4-5-6-3 Firing order Phasing : 0-45-90-135-180-225-270-315 : 0.50 (0.75) Tolerance + - \* Time to cyl. no. : 1 BEGINNING OF DELIVERY DIFFERENCE betw. rack trav. m: 5.50 & maximum rack tra: 10.00 Difference \* CS : 1.70...2.00 BASIC SETTING 1st speed rpm : 630Rack travel in mm : 13.30...13.40 vel.quantity cm3/: 26.6...26.8 100 s: (26.3...27.1) cm3 : 0.5Spread 100 s: (0.9) rpm : 325.0 2nd speed Rack travel in mm : 6.1...6.3 Del.quantity cm3/ : 4.7...5.3 100 s: (4.5...5.5) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed travel mm : 1.40...1.60 2nd speed : 450 : 2.80...3.20 : 950 travel mm 3rd speed rpm : 7.90...8.30 travel mm : 1100 4th speed rpm travel mm : 9.40...9.60 : 1300 5th speed rpm travel mm : 11.50...11.90

GUIDE SLEEVE POSITION

Control-lever position

Dearee: -1 hPa : 1200 Pressure Speed rpm : 1270 Rack travel in mm : 7.00...13.00 : 14.50 ... 14.70 Rack travel mm Measurement FULL LOAD DELIV. AT FULL LOAD STOP 1/min: 1050 Speed 1st version 1st pressure hPa : -Rack travel in m: 10.60...11.00 rpm : 630 Speed Aneroid pressure h: 1200 Del.quantity : 266.0...268.0 2nd pressure hPa : 175
Rack travel in m: 11.40...11.50 1000 : (263.0...271.0) 3rd pressure hPa : 315 Rack travel in m: 12.40...12.80 : 5.00 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 280 (290) Speed 1st version Control Lever FUEL DELIVERY CHARACTERISTICS position degrees: 62...70 Testina: 1st version 1st rack travel in: 13.50 Aneroid pressure h: 1200 rpm : 1095...1105 1050 Speed Speed mon 2nd rack travel in: 4.00 Del.quantity cm3/: 264.0...270.0 rpm : 1245...1275 1000 s: (261.0...273.0) Speed 4th rack travel in: 1350 cm3 : 10.00Spread rpm : 0.00...1.00 Speed 1000 s: (14.0) : 950 Speed rom Del.quantity cm3/: 199.0...201.0 \* 1000 s: (186.0...213.5) LOW IDLE 1 Control Lever position degrees: 11...19 Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 208.5...212.5 Testina: 1909 s: (206.5...214.5) Speed rom Minimum rack trave: 1.00 : 325 Speed rpm Rack travel in mm : 6.10...6.30 **BREAKAWAY** CONSTANT REGULATION 1st version rpm : 325...580 Speed 1mm rack travel less than TORQUE CONTROL full load rack tr: 13.50 Dimension a mm :? rpm : 1095...1105 Speed Torque control curve - 1st version : 630 1st speed rpm STARTING FUEL DELIVERY Rack travel in m: 13.30...13.40 : 1050 2nd speed rom Rack travel in m: 14.50...14.70 Speed : 100 rpm Del.quantity cm3/: 180.0...220.0 1000 s: (176.0...224.0) 3rd speed rpm : 800 Rack travel in m: 13.90...14.30 th speed rpm : 500 Rack travel in m: 0.00...12.80 Rack travel in mm : 11.50...12.10 4th speed rpm LOW IDLE Aneroid/Altitude Speed rpm : 325
Rack travel in mm : 6.10...6.30
Del.quantity cm3/: 47.0...53.0 Compensator Test 1st version 1000 s: (45.0...55.0) Setting Spread cm3 : 8.00 : 1050 1000 s: (12.00) Speed רוסותו

## Remarks:

: MACK # 313GC5195-P2

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Bow dimension: Sliding-sleeve position = 37.0 mm \* This test specification applies only to the engine/nozzle-and-holder assemblies on an injection-pump test bench: setting for test equipment, check value for engine equipment. BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : VOL 7,1 h Edition : 18.12.91 : 29.11.51 Replaces Test oil : ISO-4113

Combination no. : 0 402 846 052

Injection pump

Pump designation : FE6P110A320RS8009-1

: 0 412 816 011 EP type number

Governor

Governor design. : RQV300...1100PA1017

: D 421 813 965 Governer no.

Customer-spec. information Customer : VME

Engine : TD73KBE

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 078

Inlet press., bar: 2.50

Test nozzle holder

: 1 688 901 101 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.80...3.90 Prestroke mm

: (3.75...3.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance - - \* : 0.30 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 10.00...10.10

Del.quantity cm3/: 16.4...16.6

100 s: (16.2...16.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 4.7...5.1 Del.quantity cm3/: 2.1...2.5 100 s: (1.8...2.8)

Spread cm3 : 0.7

100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed : 0.90...1.30 travel mm

rpm : 500 2nd speed : 2.60...3.20 travel mm

rpm : 800 3rd speed

: 4.90...5.50 travel mm

rpm : 1150 4th speed

: 8.20...8.40 rpm : 1300 travel mm

5th speed

travel mm : 10.10...10.50

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1160

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 164.0...166.0 1000 : (162.0...168.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 110...118

Testina:

1st rack travel in: 9.00

rpm : 1140....1150 Speed

2nd rack travel in: 4.00

Speed rpm : 1200...1230 4th rack travel in: 1320

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 78...86

Testing:

Speed : 100 nom Minimum rack trave: 6.40 : 300 rpm

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 300...370 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 1000 rpm : 1200 Pressure hPa

: 10.00...10.10 Rack travel mm

Measurement

1/min: 1000 Speed

1st pressure hPa : -

Rack travel in m: 7.70...7.90

2nd pressure hPa : 90 Rack travel in m: 7.90...8.00

3rd pressure hPa :?

Rack travel in m: 9.50...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 116.0...118.0

1000 s: (113.0...121.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.00

rpm : 1140...1150 Speed

LOW IDLE

: 300 Speed rpm

Rack travel in mm : 4.70...4.90

Remarks:

**APPLICATION** 

Wheel loader

114

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks : MB 6,1 G : 24.01.92 Test sheet Phasing Edition : 11.91 Replaces Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 244 030 1st speed Injection pump Pump designation : PES4MW100/720RS1513 : 0 413 204 011 EP type number Governor Governor design. : RQV300...1300MW119 : 0 420 083 251 Governer no. Customer-spec. information Spread Customer : MB-NFZ Engine : 0M364LA 2nd speed 1st version kw : 102.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 1st speed Inlet press., bar: 1.50 travel mm 2nd speed Test nozzle holder travel mm : 0 681 343 009 assembly 3rd speed travel mm Openina 4th speed pressure, bar : 172...175 travel mm Test Lines : 1 680 750 089 Outside diameter x Wall thickness : 8.00x2.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed per values

: 0-90-180-270 : 0.50 (0.75) Tolerance + - ° rpm: 1300 Rack travel in mm : 12.80...12.90 Del.quantity cm3/: 11.8...12.0 100 s: (11.6...12.2) cm3 : 0.3100 s: (0.6) rpm : 300.0 Rack travel in mm: 4.2...4.4 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1350 8.40...8.80 : 880 וחמיו : 4.90...5.10 : 500 rpm : 2.70...3.30 : 300 man : 1,20,...1,60 GUIDE SLEEVE POSITION Control-Lever position Degree: -1 rpm : 1350 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP rpm : 1300 Aneroid pressure h: 1000 : 118.0...120.0 Del.quantity 1000 : (116.0...122.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED

: 1-3-4-2

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 21.00...0.00

: 5.20...5.30

: (5.15...5.35)

1st version Control lever position degrees: 110...118 Testina: 1st rack travel in: 11.80 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1455...1485 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 69...77 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 4.3 Testing: : 200 Speed rpm Minimum rack trave: 6.00 : 300 rpm Rack travel in mm : 4.20...4.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 hPa : Pressure : 7.90...8.00 Rack travel mm Measurement 1/min : 500 Speed 1st pressure hPa : 200 Rack travel in m: 8.70...8.90 2nd pressure hPa : 500 Rack travel in m: 10.90...11.00 3rd pressure hPa : 1000 Rack travel in m: 12.80...12.90 START CUT-OUT Speed 1/min: 200 (230) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 : 600 Speed rpm Del.quantity cm3/: 115.0...118.0

1000 s: (112.5...120.5) cm3 : 5.00

1000 s: (7.0)

Speed rpm : 500
Del.quantity cm3/ : 47.5...49.5
 1000 s: (45.5...51.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 105.0...115.0 1000 s: (102.0...118.0)

LOW IDLE

Remarks:

116

Spread

Aneroid pressure h: -

BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks : MB 6,1 F : 22.01.92 : 11.91 Test sheet Phasing : 0-60-120-180-240-300 Edition Replaces Tolerance + - \* : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 246 030 1st speed rpm : 1300Injection pump Pump designation : PES6MW100/720RS1511 Rack travel in mm : 13.40...13.50 EP type number : 0 413 206 011 Governor Del.quantity cm3/: 13.0...13.2 Governor design. : RQ300/1300MW105-9 : 0 420 082 061 Governer no. 100 s: (12.8...13.6) Customer-spec. information cm3 : 0.3Spread Customer : MB-NFZ 100 s: (0.6) Engine : 0M366LA rpm : 300.0 2nd speed : 177.0 1st version kW Rack travel in mm: 4.2...4.4 Rated speed : 2600 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL rpm : 1400 1st spead Inlet press., bar: 1.50 : 8.10...8.50 travel mm 2nd speed rpm : 1300 Test nozzle holder : 6.90...7.10 travel mm assembly : 0 681 343 009 3rd speed rpm : 600 : 4.80...5.40 travel mm Opening 1 4th speed : 300 rpm pressure, bar : 172...175 : 1.30...1.70 travel mm GUIDE SLEEVE POSITION Test Lines : 1 680 750 089 Control-lever position Degree: 108 rpm : 1000 Outside diameter x Wall thickness Rack travel in mm : 14.70...16.30 : 8.00X2.50X600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1300 Aneroid pressure h: 1200 per values : 130.0...132.0 Del.quantity 1000 : (128.0...136.0) BEGINNING OF DELIVERY Test pressure, bar: 30...32 Spread cm3 : 3.50 1000 : (6.00) Prestroke mm : 5.20...5.30 : (5.15...5.35) RATED SPEED

Rack travel in mm : 21.00...0.00

1st version Control Lever position degrees: 101...109 Setting point: Speed : 1000 riom Rack travel in mm: 15.5 Testing: 1st rack travel in: 12.40 : 1345...1360 Speed man 2nd rack travel in: 4.00 Speed rpm : 1445...1475 4th rack travel in: 1550 rom : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 4.3 Testing: Speed וווכניו : 200 Minimum rack trave: 6.00 Speed : 300 morn Rack travel in mm : 4.20...4.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -Rack travel mm : 7.80...7.90 Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 8.50...8.70 2nd pressure hPa : 600 Rack travel in m: 10.60...10.80 3rd pressure hPa : 1200 Rack travel in m: 13.40...13.50 START CUT-OUT 1/min: 180 (200) Speed FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 122.5...125.5 1000 s: (120.0...128.0) Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/: 46.0...48.0
1000 s: (44.0...50.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.40 rpm : 1345...1360 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 115.0...125.0 1000 s: (112.0...128.0) LOW IDLE rpm : 300 Speed Rack travel in mm: 4.20...4.40
Del.quantity cm3/: 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3: 3.50
1000 s: (5.50) Remarks: •

Speed

1st version

Aneroid pressure h: 1200

rpm

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-3-4-2 Note remarks Test sheet : VOL 4,50 Phasina : 0-90-180-270 Edition : 24.01.92 : 07.91 Replaces : 0.50 (0.75) Tolerance + - ° Test oil : ISO-4113 BASIC SETTING : 0 403 444 132 Combination no. rpm: 700 1st speed Injection pump Pump designation : PES4MW100/320RS1222 Rack travel in mm : 13.00...13.10 EP type number : 0 413 404 117 Governor Del.quantity cm3/: 11.7...11.9 Governor design. : RQV300...1100MW39-5 : 0 420 083 068 100 s: (11.5...12.1) Governer no. Customer-spec. information Spread cm3 : 0.3Customer : VMF 100 s: (0.6) : TD45B Engine mpm : 300.0 2nd speed : 88.5 1st version kW Rack travel in mm: 6.4...6.6 Rated speed : 2200 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL 1st speed rom : 1225 Inlet press., bar: 1.50 : 9.40...9.80 travel mm 1150 2nd speed man : 8.30...8.50 Test nozzle holder travel mm : 0 681 343 009 assembly 3rd speed : 600 mgn : 2.70...3.30 travel mm : 300 Opening 4th speed rpm : 173...176 pressure, bar travel mm : 1.00...1.40 GUIDE SLEEVE POSITION Test Lines : 1 680 750 014 Control-lever position Degree: -1 rpm : 1130 Outside diameter x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00X2.00X600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. : 700 Speed rom : 117.0...119.0 per values \_\_\_ Del.quantity 1000 : (115.0...121.0) BEGINNING OF DELIVERY : 3.50 Spread cm3 Test pressure, bar: 30...32 1000 : (6.00) : 3.00...3.10 Prestroke mm RATED SPEED : (2.95...3.15) Rack travel in mm : 9.00...12.00 1st version

Control lever position degrees: 100...108 Testing: 1st rack travel in: 12.00 Speed rpm : 1140...1150 2nd rack travel in: 4.00 Speed : 1225...1255 rpm 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring man Rack travel in mm: 6.5 Testing: Speed : 200 rpm Minimum rack trave: 8.00 : 300 Lbw Rack travel in mm : 6.40...6.60 START CUT-OUT Speed 1/min : 220 (250) FUEL DELIVERY CHARACTERISTICS 1st version : 1000 Speed rpm Del.quantity cm3/: 117.0...120.0 1000 s: (114.5...122.5) cm3 : 5.50 Spread 1000 s: (7.0) RACK STOP ADJUSTMENT Speed rom : 100 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.00 rpm : 1140...1150 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 140.0...150.0 1000 s: (137.0...153.0) Rack travel in mm : 19.00...21.00

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/: 13.0...17.0
1000 s: (10.5...19.5)
Spread cm3 : 3.50
1000 s: (5.50)

:

Remarks:

J20

LOW IDLE

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 6,1 B 1 Edition : 22.01.92 Phasing : 01.91 Replaces Test oil : ISO-4113 : 0 403 446 272 Combination no. Injection pump Pump designation : PES6MW100/720RS1131-: 0 413 406 165 EP type number Governor Governor design. : RQ300/1300MW105-1 : 0 420 082 048 Governer no. Customer-spec. information Spread Customer : MB-NFZ : 0M366LA Engine 1st version kW : 155.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 C47 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter Speed x Wall thickness : 6.00X1.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Speed per values \_\_\_ BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm : 1300Rack travel in mm : 13.10...13.20 Del.quantity cm3/: 9.8...10.0 100 s: (9.6...10.2) cm3 : 0.3100 s: (0.6) rpm : 300.0 2nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1450 1st speed : 9.50...9.90 travel mm rpm : 1360 2nd speed : 7.30...7.50 travel mm : 550 3rd speed rem travel mm : 4.20...4.80 4th speed 300 rpm : 1.30...1.70 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: 108 rpm : 900 Rack travel in mm : 14.70...16.30 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1300 Aneroid pressure h: 1000 Del.quantity : 90.0...102.0) Spread : 3.50 cm3 1000 : (6.00)

RATED SPEED

Prestroke mm

Test pressure, bar: 30...32

: 3.60...3.70 : (3.55...3.75)

1st version Control Lever position degrees: 99...107 Setting point: rpm : 900 Speed Rack travel in mm: 15.5 Testing: 1st rack travel in: 12.10 rpm : 1345...1360 Speed 2nd rack travel in: 4.00 Speed rpm : 1435...1465 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring Speed rom Rack travel in mm: 6.5 Testina: Speed : 200 rpm Minimum rack trave: 8.00 : 300 Speed COM Rack travel in mm: 5.40...6.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa: -: 10.30,...10.40 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 11.20...11.30 2nd pressure hPa : 350 Rack travel in m: 12.40...12.70

3rd pressure hPa : 1000

Rack travel in m: 13.10...13.20 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

rpm : 750

Aneroid pressure h: 1000

Del.quantity cm3/: 87.0...91.0 1600 s: (85.0...93.0) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: rpm\_ : 500 Speed Del.quantity cm3/: 36.0...73.0 1000 s: (34.0...40.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.10 rpm : 1345...1360 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300
Rack travel in mm : 5.40...6.60
Del.quantity cm3/ : 10.0...14.0
1000 s: (7.5...16.5)
Spread cm3 : 3.50 1000 s: (5.50) Remarks: :

Speed

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks : MB 6,1 D 3 : 22.01.92 Test sheet Phasing : 0-60-120-180-240-300 Edition Replaces : 06.91 Tolerance + - \* : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 279 1st speed rom: 1200 Injection pump Pump designation : PES6MW100/720RS1131 Rack travel in mm : 10.20...10.30 EP type number : 0 413 406 123 Governor Del.quantity cm3/: 8.4...8.6 Governor design. : RQ300/1200MW105-6 : 0 420 082 054 100 s: (8.2...8.8) Governer no. Customer-spec. information Spread cm3 : 0.3Customer : MB-NFZ 100 s: (0.6) Engine : 0M 366 A rpm : 300.0 2nd speed Rack travel in mm: 5.3...5.5 1st version kW : 115.0 : 2400 Del.quantity cm3/: 1.0...1.4 Rated speed 100 s: (0.7...1.6) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. "C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 047 GUIDE SLEEVE TRAVEL 1st speed rpm : 1300 Inlet press., bar: 1.50 travel mm : 8.80...9.20 2nd speed : 1200 rpm Test nozzle holder : 7.40...7.60 travel mm : 0 681 343 009 assembly : 700 3rd speed rpm : 6.70...7.30 travel mm Opening 4th speed : 450 rpm pressure, bar : 172...175 : 5.10...5.70 travel mm : 300 5th speed rpm travel mm : 2.60...3.00 Test Lines : 1 680 715 015 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: 108 : 6.00x1.50x600 x Length mm rpm : 800 Rack travel in mm : 14.70...16.30 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. 1st version

rpm : 1200

: 84.0...86.0 1000 : (82.0...88.0) : 3.50

: (6.00)

Aneroid pressure h: 700

cm3

1000

Speed

Spread

Del.quantity

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80 : (3.65...3.85) Rack travel in mm : 9.00...12.00

RATED SPEED 3rd pressure hPa : 700 Rack travel in m: 10.90...11.10 1st version Control Lever START CUT-OUT position degrees: 94...102 1/min: 200 (230) Speed Setting point: Speed : 800 rpm FUEL DELIVERY CHARACTERISTICS Rack travel in mm: 15.5 Testina: 1st version 1st rack travel in: 9.20 Aneroid pressure h: 700 Speed rpm : 1240...1250 2nd rack travel in: 4.00 Speed rpm : 600 Del.quantity cm3/ : 78.0...81.0 Speed rpm : 1305...1335 4th rack travel in: 1450 1000 s: (75.5...83.5) cm3 : 5.00 Spread rpm : 0.00,..1.00 1000 s: (7.0) Speed Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 44.0...46.0 1000 s: (42.0...48.0) LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.4 **BREAKAWAY** Testina: 1st version : 200 Speed rpm 1mm rack travel less than Minimum rack trave: 7.50 rpm : 300 Speed full load rack tr: 9.20 Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00 rpm : 1240...1250 Speed : 410...470 Speed rpm STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.80 Speed rpm : 100 Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.20...10.30 2nd speed rpm : 600 LOW IDLE Rack travel in m: 10.90...11.10 rpm : 1100 3rd speed rpm : 300 Speed Rack travel in m: 10.30...10.60 Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3 : 3.50 1000 s: (5.50) Aneroid/Altitude Compensator Test 1st version Remarks: Setting : 500 Speed rpm hPa : 200 Pressure : 8.90...9.00 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.60...8.70 2nd pressure hPa : 350

Rack travel in m: 10.20...10.50

### BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : FIA8,1D1 Edition : 31.01.92 Replaces : 12.91 Test oil : ISO-4113

7 200 1110

Combination no. : 0 403 446 284

Injection pump

Pump designation : PES6MW100/720RS1197

EP type number : 0 413 406 185

Governor

Governor design. : RQV325...1250MW109-1

K

Governer no. : 0 420 083 995

Customer-spec. information Customer : IVECO-FIAT

Engine : 8060.45.6090

1st version kW : 167.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. \*C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle hold:

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 325.0 Rack travel in mm : 7.4...7.6

Del.quantity cm3/: 2.0...2.4 100 s: (1.7...2.6)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1400

travel mm : 10.00...10.40

2nd speed rpm : 825

travel mm : 4.90...5.10

3rd speed rpm : 400

travel mm : 2.90...3.50

4th speed rpm : 325

travel mm : 1.50...1.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1200

Del.quantity : 105.0...107.0

1000 : (103.0...109.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever position degrees: 116...124 Testina: 1st rack travel in: 13.50 1000 s: (7.0) rpm : 1310...1320 Speed Aneroid pressure h: -2nd rack travel in: 4.00 : 500 Speed rpm Del.quantity cm3/: 67.0...69.0 1000 s: (65.0...71.0) rpm : 1445...1475 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 BREAKAWAY Control Lever position degrees: 76...84 1st version Setting point w/out bumper spring 1mm rack travel less than rpm Rack travel in mm: 7.5 full load rack tr: 13.50 rpm : 1310...1320 Speed Testing: STARTING FUEL DELIVERY Speed ; 200 rpm Minimum rack trave: 9.50 Speed rpm : 325 Rack travel in mm : 7.40...7.60 Speed : 100 rpm vel.quantity cm3/: 40.0...60.0 TORQUE CONTROL 1000 s: (37.0...63.0) Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 14.50...14.60 LOW IDLE rpm : 1100 2nd speed rpm : 325 Speed Rack travel in m: 14.20...14.40 Rack travel in mm : 7.40...7.60 Del.quantity cm3/: 20.0...24.0 1000 s: (17.5...26.5) 3rd speed rpm : 900 Rack travel in m: 13.70...13.90 4th speed rpm : 700 cm3 : 3.50 1000 s: (5.50) Spread Rack travel in m: 13.40...13.60 Aneroid/Altitude Remarks: Compensator Test 1st version Settina Speed : 500 nom Pressure hPa : -Rack travel mm : 10.50...10.70 Measurement Speed 1/min: 500 1st pressure hPa : 450 Rack travel in m: 11.70...11.80 2nd pressure hPa : 700 Rack travel in m: 12.80...13.10 3rd pressure hPa : 1000 Rack travel in m: 13.40...13.60 FUEL DELIVERY CHARACTERISTICS 1st version

Aneroid pressure h: 1000

Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks : MB 6,1 B 8 Test sheet Edition : 22.01.92 Phasing : 0-60-120-180-240-300 : 11.91 Replaces : ISO-4113 Test oil Tolerance + - ° : 0.50 (0.75) Combination no. : 0 403 446 294 BASIC SETTING Injection oump rom: 1100 1st speed : PES6MW100/720RS1131-Pump designation Rack travel in mm : 13.60...13.70 : 0 413 406 165 EP type number Del.guantity cm3/: 11.2...11.4 Governor : RQV300...1100MW67-4 Governor design. : 0 420 083 261 100 s: (11.0...11.6) Governer no. cm3 : 0.3Customer-spec, information Spread Customer : MB-NFZ 100 s: (0.6) : 0M366LA Engine 2nd speed rpm : 300.0 Rack travel in mm : 5.3...5.5 : 162.0 1st version kW Rated speed : 2200 Del.guantity cm3/: 0.9...1.3 100 s: (0.6...1.5) TEST BENCH REQUIREMENTS cm3 : 0.3 Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL 1st speed Inlet press., bar: 1.50 travel mm : 880 2nd speed rpm Test nozzle holder travel mm : 0 681 343 009 500 assembly 3rd speed rpm travel mm 4th speed : 300 Openina rpm : 172...175 pressure, bar travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 089 Control-lever position Outside diameter Speed x Wall thickness : 8.00X2.50X600 x Length mm

(B) Setting of injection pump rpm : 1150 7.80...8.30 5.90...6.10 : 2.70...3.30 : 1.20...1.60 Degree: -1 rpm : 1150 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1100 Speed Aneroid pressure h: 1000 Del.quantity : 112.0...116.0) : 3.50 cm3 Spread : (6.00) 1000

RATED SPEED

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

: 3.60...3.70

: (3.55...3.75)

per values \_\_\_\_

Test pressure, bar: 30...32

BEGINNING OF DELIVERY

Prestroke mm

1st version Control lever position degrees: 120...128 Setting point: Speed riom Rack travel in mm: 16.5 Testing: 1st rack travel in: 12.60 rom : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1285...1315 Speed 4th rack travel in: 1450 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 74...82 Setting point w/out bumper spring rpm Rack travel in mm: 5.4 Testing: Speed : 200 rpm Minimum rack trave: 7.00 Speed : 300 rom Rack travel in mm : 5.30...5.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : -Pressure : 9.40...9.50 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 400 Rack travel in m: 10.60...10.80 2nd pressure hPa : 600 Rack travel in m: 12.60...12.80 3rd pressure hFa : 1000 Rack travel in m: 13.60...13.80 START CUT-OUT Speed 1/min: 180 (200) FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 104.5...107.5 1000 s: (102.0...110.0) Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 35.0...37.0 1000 s: (33.0...39.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.60 Speed rpm : 1140...1150 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 5.30...5.50 Del.cuantity cm3/ : 9.0...13.0 1000 s: (6.5...15.5) Spread cm3 : 3.501000 s: (5.50) Remarks:

Speed

1st version

Aneroid pressure h: 1000

rpm : 600

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6,1 A 1 Test sheet Edition : 24.01.92 Replaces Test oil : ISO-4113 Combination no. : 0 403 446 299 Injection pump EP type number : 0 413 406 138 Governor Governor design. : 0 420 083 266 Governer no. Customer-spec, information Customer : MB-NFZ Engine : OM366A : 116.0 1st version kW Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 089 Outside diameter x Wall thickness : 8.00X2.50X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Pump designation : PES6MW100/720RS1144 : RQV300...1200MW69-5 BEGINNING OF DELIVERY Test pressure, bar: 30...32 : 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 12001st speed Rack travel in mm : 11.00...11.10 Del.quantity cm3/ : 7.7...7.9 100 s: (7.5...8.1) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 300.0 Rack travel in mm : 7.7...7.9 Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5) Spread cn3 : 0.3 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1250 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1200 Speed : 77.0...79.0 Del.quantity 1000 : (75.0...81.0) Spread cm3 : 3.50 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 10.00 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 : 1285...1315 Speed rpm 4th rack travel in: 1400 : 0.00...1.00 Speed rpm LOW IDLE 1 Control lever

position degrees: 84...92 Setting point w/out bumper spring rpm Rack travel in mm: 7.8 Testing: : 200 Speed rpm Minimum rack trave: 9.30 Speed rpm : 300 Rack travel in mm : 7.70...7.90 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 11.00...11.10 2nd speed rpm : 750 Rack travel in m: 11.70...11.90 : 600 3rd speed rpm Rack travel in m: 12.00...12.20 START CUT-OUT Speed 1/min : 230 (250) FUEL DELIVERY CHARACTERISTICS 1st version Speed : 750 rpm Spread cm3 : 5.001000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1240...1250 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm : 300 Rack travel in mm : 7.70...7.90 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

: 3.00...3.10 : (2.95...3.15) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : RVI 8,8 S 5 Edition : 31.01.92 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasina Combination no. : 0 403 446 300 Tolerance + - \* : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1171 EP type number : 0 413 406 156 rpm: 13001st speed Governor Governor design. : RQV300...1300FW80-7 Rack travel in mm : 10.80...10.90 : 0 420 083 267 Governer no. Del.quantity cm3/: 8.8...9.0 Customer-spec. information Customer : RVI 100 s: (8.6...9.2) Engine : MIDS 060212B Spread cm3 : 0.3: 117.0 1st version kW 100 s: (0.6) : 2600 Rated speed 2nd speed rpm : 300.0
Rack travel in mm : 5.40...5.30
Del.quantity cm3/: 1.6...2.0
100 s: (1.3...2.2)
Spread cm3 : 0.3 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 100 s: (0.5) Overflow valve : 1 417 413 033 (B) Setting of injection pump with governor Iniet press., bar: 1.50 GUIDE SLEEVE TRAVEL Test nozzle holder 1st speed : 1500 : 8.70...9.10 : 1 688 901 101 assembly travel mm 2nd speed : 1350 mqn Openina : 7.60...7.80 travel mm pressure, bar : 207...210 3rd speed : 500 rpm : 2.80...3.40 travel mm Orifice plate : 300 4th speed rpm diameter mm : 0,6 : 1.20...1.60 travel mm FULL LOAD DELIV. AT FULL LOAD STOP Test Lines : 1 680 750 008 1st version Outside diameter Speed rpm : 1300 x Wall thickness Aneroid pressure h: 700 : 88.0...90.0 : 6.00X2.00X600 x Length mm Del.quantity 1000 : (86.0...92.0) (A) Injection pump setting values Spread cm3 : 3.50 Insp. values in parentheses 1000 : (6.00) Set equal delivery quant. per values RATED SPEED BEGINNING OF DELIVERY 1st version

Control lever

position degrees: 116...124

Test pressure, bar: 30...32

Testing: 1st rack travel in: 9.80 rpm : 1390...1400 2nd rack travel in: 4.00 Speed nom : 1505...1535 4th rack travel in: 1700 rom : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 61...69 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.2 Testing: Speed rom Minimum rack trave: 7.0 mon Rack travel in mm : 5.40...5.80 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 700 mqn Pressure Rack travel mm : 10.80...10.90 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.00...9.20 2nd pressure hPa : 120 Rack travel in m: 10.40...10.50 3rd pressure hPa : 180 Rack travel in m: 9.60...9.90 START CUT-OUT beea 1/min: 230 (250) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 rpm : 900 Speed Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) Spread cm3 : 5.00

1000 s: (7.0)

rpm : 500

Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0)

Aneroid pressure h: -

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.80 rpm : 1390...1400 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0

1000 s: (87.9...113.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 5.40...5.80 Del.quantity cm3/: 16.0...20.0

1000 s: (13.5...22.5)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Start-of-delivery mark mode with prestroke 3.90...3.10 mm at barrel 1

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : MB 6,1 B 12 : 31.01.92 Test sheet Edition Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 : 0.50 (0.75) Tolerance + - ° Combination no. : 0 403 446 301 BASIC SETTING rpm: 1300 Injection pump 1st speed Pump designation : PES6MW100/720RS1131-Rack travel in mm : 14.40...14.50 EP type number : 0 413 406 165 Del.quantity cm3/: 11.4...11.6 Governor Governor design. : RQV300...1300MW50-22 : 0 420 083 268 100 s: (11.2...11.8) Governer no. Customer-spec. information cm3 : 0.3Spread Customer : MB-NFZ 100 s: (0.6) : 0M366LA Engine rpm : 300.02nd speed Rack travel in mm: 6.3...6.5 1st version kW , : 177.0 : 2600 Del.quantity cm3/: 1.0...1.4 Rated speed 100 s: (0.7...1.6) cm3 : 0.3TEST BENCH REQUIREMENTS Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 419 992 198 GUIDE SLEEVE TRAVEL 1st speed rpm : 1450 : 9.40...9.80 rpm : 1350 Inlet press., bar: 1.50 travel mm 2nd speed : 8.50...8.70 Test nozzle holder travel mm assembly : 0 681 343 009 : 450 3rd speed rpm travel mm : 2.60...3.20 : 300 Openina 4th speed rpm pressure, bar : 172...175 : 1.20...1.60 travel mm GUIDE SLEEVE POSITION Test lines : 1 680 750 089 Control-lever position Degree: -1 Outside diameter rpm : 1340 Speed x Wall thickness Rack travel in mm : 15.20...17.80 : 8.00X2.50X600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1300 Aneroid pressure h: 1000 per values : 114.0...116.0 Del.quantity 1000 : (112.0...118.0) BEGINNING OF DELIVERY

cm3

Spread

RATED SPEED

: 3.50

1000 : (6.00)

KO5

Prestroke mm

Test pressure, bar: 30...32

: 3.60...3.70 : (3.55...3.75)

1st version Control lever position degrees: 114...122 Setting point: Speed rpm : 1340 Rack travel in mm: 16.5 Testing: 1st rack travel in: 13.40 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1440...1470 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 78...86 Setting point w/cut bumper spring rpm : 300 Speed Rack travel in mm: 6.4 Testing: Speed riom. : 200 Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 6.30...6.50 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed mon Pressure hPa : -: 10.60...10.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.90...11.10 2nd pressure hPa : 500 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1000 Rack travel in m: 14.40...14.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000

: 750

rpm

Del.quantity cm3/: 106.5...109.5 1000 s: (104.0...112.0) Spread cm3 : 5.001000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 41.0...43.0 1000 s: (39.0...45.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.40 Speed rpm : **1340**...1350 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.30...6.50 Del.quantity cm3/ : 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: :

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 7,2 V 1 : 21.08.91 Test sheet Edition : 06.91 Replaces Test oil : ISO-4113 Combination no. : 0 403 456 114 Injection pump Pump designation : PES6MW100/321RS1201 EP type number : 0 413 406 190 Governor Governor design. : RQV250...1200MW83-2 : 0 420 083 216 Governer no. Customer-spec. information Customer : MAN Engine : D 0826 LF02 1st version kW : 169.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test lines : 1 680 750 008 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_

Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SEITING 1st speed rpm : 1000Rack travel in mm : 12.50...12.60 Del.quantity cm3/: 13.7...13.9 100 s: (13.5...14.1) Spread cm3 : 0.3100 s: (0.6) rpm : 250.0 2nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.2) Spread cm3 : 9.3 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1250 1st speed : 10.50...10.60 travel mm : 810 2nd speed rpm : 5.90...6.10 travel mm : 500 3rd speed rpm : 3.70...4.30 : 250 travel mm 4th speed rpm : 1.20...1.60 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1000 Aneroid pressure h: 1000 : 137.0...139.0 Del.quantity 1000 : (135.0...141.0) cm3 : 3.50 Spread 1000 : (6.00) RATED SPEED 1st version Control lever

position degrees: 120...128

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.50...3.60

: (3.45...3.65)

Testing: 1st rack travel in: 11.30 rpm : 1245...1260 Speed 2nd rack travel in: 4.00 Speed rpm: 1320...1350 4th rack travel in: 1400 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 5.5 Testing: Speed : 100 rpm Minimum rack trave: 7.00 rpm : 250 Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 330...420 Speed TORQUE CONTROL Torque control curve - 1st version : 1000 1st speed rpm Rack travel in m: 12.50...12.60 rpm : 600 2nd speed Rack travel in m: 12.70...12.90 3rd speed rpm : 800 Rack travel in m: 12.70...12.90 h speed rpm : 1200 4th speed Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 155 : 10.30...10.40 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 10.00...10.10 2nd pressure hPa : 550 Rack travel in m: 11.90...12.20 3rd pressure hPa : 1000 Rack travel in m: 12.70...12.90 FUEL DELIVERY CHARACTERISTICS 1st version

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.30 Speed rpm : 1245...1260

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 60.0...80.0 1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.40...5.60
Del.quantity cm3/ : 16.0...20.0
1000 s: (13.5...22.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

: MAN #3-7135

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

K08

Aneroid pressure h: 1000

BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks : MAN 7,3 D : 24.01.92 Test sheet Phasing : 0-60-120-180-240-300 Edition : 10.91 Replaces Tolerance + - \* : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 403 456 115 BASIC SETTING Injection pump Pump designation : PES6MW100/321RS1215 1st speed rpm: 1000 : 0 413 406 205 EP type number Governor Rack travel in mm : 14.20...14.30 Governor design: RQ250/1200MW84-7 Governer no. : 0 420 082 055 Del.quantity cm3/: 17.5...17.7 Customer-spec. information 100 s: (17.3...17.9) Customer : MAN cm3 : 0.3Spread Engine : D 0826 LUH 01 100 s: (0.6) 1st version kW : 199.0 rpm : 250.0 : 2400 Rated speed 2nd speed Rack travel in mm : 6.3...6.5 TEST BENCH REQUIREMENTS Deliquantity cm3/: 2.8...3.2 100 s: (2.5...3.4) cm3 : 9.3 Test oil Spread inlet temp. °C : 38...42 100 s: (0.5) Overflow valve (B) Setting of injection pump : 1 419 992 198 with governor Inlet press., bar: 1.50 GUIDE SLEEVE TRAVEL rpm : 1320 1st speed Test nozzle holder 9.30...9.70 travel mm : 0 681 343 009 : 1255 assembly 2nd speed rom : 6.50...6.70 travel mm Opening : 360 3rd speed rpm : 172...175 : 3.90...4.50 : 250 pressure, bar travel mm 4th speed rom travel mm : 1.60...2.00 Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: 108 x Length mm : 6.00X2.00X600 rpm : 600 Rack travel in mm : 19.20...20.80 (A) Injection pump setting values Insp. values in parentheses FULL LOAD DELIV. AT FULL LOAD STOP Set equal delivery quant. per values \_ 1st version Speed rpm : 1000 BEGINNING OF DELIVERY Aneroid pressure h: 1200 : 175.0...177.0 1000 : (173.0...179.0) Test pressure, bar: 30...32 Del.quantity : 3.50...3.60 : 3.50 Prestroke mm Spread cm3

1000

: (6.00)

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

RATED SPEED 1st version Control Lever

position degrees: 91...99

Setting point:

: 600 Speed rpm Rack travel in mm : 20.0

Testing:

1st rack travel in: 13.20

Speed rpm: 1245...1260 2nd rack travel in: 4.00

Speed rpm : 1340...1370 4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 67...75

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm: 6.4

Testing:

: 150 Speed man Minimum rack trave: 8.00 Speed rpm : 250 Rack travel in mm : 6.30...6.50

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 Pressure hPa : 350

: 9.70...9.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.10

2nd pressure hPa : 850

Rack travel in m: 12.30...12.60

3rd pressure hPa : 1200

Rack travel in m: 14.20...14.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed : 600 rpm

Del.quantity cm3/: 180.0...183.0

1000 s: (177.5...185.5)

Spread cm3 : 5.001000 s: (7.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 60.0...62.0 1000 s: (58.0...64.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.20

rpm : 1245...1260 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 60.0...80.0 1000 s: (57.0...83.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 28.0...32.0 1000 s: (25.5...34.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: MAN #3-7126

Start-of-delivery mark is at start of

delivery of cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 4,5 P : 24.01.92 Edition Phasing : 07.91 Replaces Test oil : ISO-4113 Combination no. : C 403 474 015 Injection pump Pump designation : PES4MW100/320RS1221 EP type number : 0 413 404 115 Governor Governor design. : RSV300...1000Mw1A315 -1 : 0 420 085 099 Governer no. Customer-spec. information Spread Customer : VME Engine : TD45B : 84.0 1st version kW : 2000 Rated speed TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 Overflow valve : 1 419 992 198 Speed Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina | pressure, bar : 172...175 Speed Test lines : 1 680 750 014 Spread Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 : 0-90-180-270 : 0.50 (0.75) Tolerance + - \* BASIC SETTING 1st speed rpm : 700 Rack travel in mm: 12.40...12.50 Del.quantity cm3/: 10.5...10.7 100 s: (10.3...10.9) cm3 : 0.3100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9) cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-Lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 4.00FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Del.quantity : 105.0...107.0 1000 : (103.0...109.0) : 3.50 cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 100...108 Setting point: Speed rom Rack travel in mm: 0.6 Testing:

1st rack travel in: 11.40

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

: 2.80...2.90

: (2.75...2.95)

Speed rpm : 1040...1050 2nd rack travel in: 4.00 Sceed man : 1070...1100 3rd rack travel in: 4.00 nom : 1130...1160 Speed 4th rack travel in: 1200 Speed : 0.30...1.70 rom LOW IDLE 1 Control Lever position degrees: 68...76 Setting point w/out bumper spring : 300 Speed rpm Rack travel in mm: 8.0 Testing: Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 300 Rack travel in mm : 7.90...8.10 FUEL DELIVERY CHARACTERISTICS 1st version : 1000 Speed rpm Del.quantity cm3/: 108.0...111.0 1000 s: (105.5...113.5) Spread cm3 : 5.50 1000 s: (7.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.40 Speed rpm : 1040...1050 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 125.0...135.0 1000 s: (122.0...138.0) Rack travel in mm : 19.00...21.00 LOW IDLE : 300 Speed rom Rack travel in mm : 8.40...8.60 Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) Spread cm3: 3.50 1000 s: (5.50) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet Edition : 10.02.1991 Replaces Test oil : ISO-4113 Combination no. : 0 403 476 039 Injection pump Pump designation : PES6MW100/320RS1132 EP type number : 0 413 406 124 Governor Governor design. : RSV325...1250M/2A314 Governer no. : 0 420 085 054 Customer-spec. information : VOLVO-PENTA Customer Engine : TD 61 AW 1st version kW : 132.0 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 000 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Openina pressure, bar : 172...175 Test Lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 2.00x6.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 Tolerance + - \* : 0.50 (0.75) BASIC SETTING 1st speed rpm: 700 Rack travel in mm: 11.30...11.40 Del.guantity cm3/: 9.5...9.7 100 s: (9.3...9.9) Spread cm3 : 0.3100 s: (0.6) rpm : 325.02nd speed Rack travel in mm: 5.6...5.7 Del.quantity cm3/ : 1.2...1.6 100 s: (0.9...1.8) Spread cm3 : 0.3100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Rack travel in mm : 0.30...1.00 Governor spring pre-tension Click setting x : 3.20FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 700 Del.quantity : 93.0...99.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control lever position degrees: 46...54 Setting point: Speed Rack travel in mm: 0.6 Testing:

1st rack travel in: 10.30

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 2.90...3.00

: (2.85...3.05)

: 1290...1300 Speed וחמיז 2nd rack travel in: 4.00 rpm : 1360...1390 Speed 4th rack travel in: 1450

Speed rom : 0.30...1.70

LOW IDLE 1 Control lever

position degrees: 16...24 Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 5.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 325 Rack travel in mm : 5.10...5.20

SET IDLE AUXILIARY SPRING Speed rpm : 325 Rack travel in mm : 5.60...5.70

Aneroid/Altitude Compensator Test

1st version Setting

Speed rom : 700 Pressure hPa : 300

Rack travel mm : 10.20...10.30

Measurement

1/min: 700 Speed

1st pressure hPa : 425

Rack travel in m: 11.10...11.20

2nd pressure hPa : -Rack travel in m: 9.80...9.90

3rd pressure hPa : 700 Rack travel in m: 11.30...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 68.5...70.5 1000 s: (66.5...72.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.30

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed T)OM : 10C

Del.quantity cm3/: 140.0...160.0 1000 s: (137.0...163.0) Rack travel in mm: 19.00...21.00

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 5.60...5.70 Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5)

.

cm3 : 3.50 1000 s: (5.50) Soread

Remarks:

K14

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : PEN 6,1 P 6 Edition : 31.01.92 Phasing : 0-60-120-180-240-300 Replaces Test oil : ISO-4113 Tolerance + - \* : 0.50 (0.75) Combination no. : 0 403 476 042 BASIC SETTING Injection pump 1st speed rpm: 1000 Pump designation : PES6MW100/320RS1132 Rack travel in mm : 10.80...10.90 EP type number : 0 413 406 124 Governor Governor design. : RSV325...1250MW2A308 Del.guantity cm3/: 8.5...8.7 : 0 420 085 186 Governer no. 100 s: (8.3...8.9) Customer-spec. information Spread cm3 : 0.3Customer : VOLVO-PENTA 100 s: (0.6) Engine : TD 61 APP rpm : 325.0 2nd speed 1st version kW : 147.0 Rack travel in mm: 6.1...6.2 : 2500 Del.quantity cm3/: 1.2...1.6 Rated speed 100 s: (0.9...1.8) TEST BENCH REQUIREMENTS cm3 : 0.3Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Control-lever position Overflow valve Degree: -3 : 1 457 413 010 rpm : 800 Speed Rack travel in mm : 0.30...1.00 Inlet press., bar: 1.50 Governor spring pre-tension Test nozzle holder Click setting x : 3.20 : 0 681 343 009 assembly FULL LOAD DELIV. AT FULL LOAD STOP Openina pressure, bar : 172...175 1st version rpm : 1000 Speed : 85.0...87.0 Del.quantity 1000 : (83.0...89.0) Test Lines : 1 680 750 014 : 3.50 : (6.00) cm3 Spread Outside diameter 1000 x Wall thickness : 2.00x6.00x600 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control Lever Set equal delivery quant. position degrees: 50...58 per values Setting point: BEGINNING OF DELIVERY Speed rom Test pressure, bar: 30...32 Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.80

Prestroke mm

: 2.90...3.00 : (2.85...3.05)

Speed rpm : 1290...1300 2nd rack travel in: 4.00 rpm : 1340...1370 Speed 4th rack travel in: 1450 rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 20...28 Setting point wout bumper spring Speed rpm : 325 Rack travel in mm : 6.1 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm: 325 Rack travel in mm: 6.10...6.20 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.80 Speed rpm : 1290...1300 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0 1000 s: (137.0...163.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm: 325
Rack travel in mm: 6.10...6.20 Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS : 3.20...3.30 Prestroke mm : (3.15...3.35)

Rack travel in mm : 14.00...16.00

Firing order : 1-5-3-6-2-4 Note remarks : MAN 5,6 Q : 22.01.92 Test sheet Edition : 03.91 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 403 476 099 Tolerance + -- \* : 0.50 (0.75) Injection pump BASIC SETTING Pump designation: PES6MW100/320RS1209 : 0 413 406 200 EP type number 1st speed rpm: 700 Governor Governor design. : RSV300...750MW1A802 Rack travel in mm : 14.50...14.60 Governer no. : 0 420 085 113 Del.quantity cm3/: 14.3...14.5 Customer-spec. information Customer 100 s: (14.1...14.7) : MAN : D0826LE20 Spread Engine cm3 : 0.31st version kW : 116.0 100 s: (0.6) : 1500 Rated speed rpm : 300.0 2nd speed Rack travel in mm : 6.6...7.4 Del.quantity cm3/ : 3.4...3.8 100 s: (3.1...4.0) TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 cm3 : 0.6 Spread 100 s: (0.9) Overflow valve : 1 419 992 198 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -3 rpm : 800 Test nozzle holder Rack travel in mm : 0.30...1.00 : 1 681 901 101 assembly FULL LOAD DELIV. AT FULL LOAD STOP Openina : 207...210 pressure, bar 1st version Speed rpm : 700 Orifice plate Del.quantity : 143.0...145.0 1000 : (141.0...147.0) diameter mm : 0.6 : 3.50 Spread cm3 1000 : (6.00) Test Lines : 1 680 750 008 RATED SPEED Outside diameter x Wall thickness 1st version : 6.00x2.00x600 x Length mm Control lever position degrees: 84...92 (A) Injection pump setting values

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 13.5 Speed rpm : 750...755 \*

Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

2nd rack travel in: 4.00 rpm : 797...810 Speed

4th rack travel in: 950 Speed rom : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 64...72

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.0

Testing:

Speed : 100 rom Speed rpm : 300
Rack travel in mm : 6.60...7.40
Rack travel in mm : 2.00
Speed rpm : 310...370

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

## STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (127.0...153.0)

## LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.60...7.40 Del.quantity cm3/ : 34.0...38.0 1000 s: (31.5...40.5)

cm3 : 6.00 Spread 1000 s: (9.00)

Remarks:

: MAN #3-7111

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

\* Read off speed set under 1. Add 47...55 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : STE 6,5 L 4 : 22.01.92 Edition : 03.88 Replaces Test oil : ISO-4113 Combination no. : 0 403 546 010 Injection pump Pump designation : PE6MW100/720RS1157 : 0 413 506 103 EP type number Governor Governor design. : RQV250...1200MW93 Governer no. : 0 420 083 136 Customer-spec, information Customer : STEYR Engine : WD 612.63 : 130.0 1st version kW : 2400 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00X2.00X600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - \* : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1200 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 10.9...11.1 100 s: (10.7...11.3) cm3 : 0.3Spread 100 s: (0.6) rpm : 250.02nd speed Rack travel in mm: 5.9...6.0 Del.quantity cm3/: 1.2...1.6 100 s: (0.9...1.8) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1340 1st speed : 10.00...10.40 travel mm rpm : 1230 2nd speed : 8.30...8.50 travel mm : 700 3rd speed rom : 4.00...4.60 travel mm : 250 4th speed rpm : 0.80...1.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1230 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200 Aneroid pressure h: 700 Del.quantity : 109.0...111.0 1000 : (107.0...113.0) : 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.00...3.10 : (2.95...3.15) 1st version Control lever position degrees: 102...110 Testina: 1st rack travel in: 10.90 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 Speed rpm : 1295...1325 4th rack travel in: 1450 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 68...76 Setting point w/out bumper spring rpm : 250 Rack travel in mm : 6.1 Testina: Speed : 100 COM Minimum rack trave: 7.50 Speed rpm : 250 Rack travel in mm : 6.00...6.20 Anaroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -: 11.20...11.30 Rack travel mm Measurement 1/min: 500 Speed 2nd pressure hPa : 450 Rack travel in m: 11.50...11.60 3rd pressure hPa : 700 Rack travel in m: 11.90...12.00 START CUT-OUT 1/min : 200 (220) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 700 Del.quantity cm3/: 103.0...106.0 1000 s: (100.5...108.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 78.0...80.0

1000 s: (76.0...82.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.90 Speed rom : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...140.0 1000 s: (127.0...143.0)

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.90...6.00 Del.quantity cm3/ : 12.0...16.0 1000 s: (9.5...18.5)

:

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : STE 6,5 L 2 : 22.01.92 Test sheet Edition : 03.88 Replaces Test oil : ISO-4113 : 0 403 546 013 Combination no. Injection pump Pump designation : PE6MW100/720RS1157 : 0 413 506 103 EP type number Governor Governor design. : RQ250/1200MW94 : 0 420 082 027 Governer no. Customer-spec. information Customer : STEYR Engine : WD 612.63 1st version kW : 130.0 Rated speed : 2400 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test Lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Firing order : 1-5-3-6-2-4 : 9-60-120-180-240-300 Phasing Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1200 Rack travel in mm : 11.90...12.00 Del.quantity cm3/: 10.9...11.1 100 s: (10.7...11.3) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 250.0Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 1.2...1.6 100 s: (0.9...1.6) Spread cm3 : 0.3 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1320 1st speed : 8.90...9.30 travel mm rpm : 1250 2nd speed : 6.20...6.40 travel mm 3rd speed 375 rpm : 4.00...4.60 travel mm 250 4th speed rpm : 1.50...1.90 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: 108 rpm : 600 Speed Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1200 Aneroid pressure h: 700 : 109.0...111.0 Del.quantity 1000 : (107.0...113.0) : 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 30...32

Rack travel in mm : 9.00...12.00

: 3.00...3.10 : (2.95...3.15)

1st version Control Lever position degrees: 96...104 Setting point: Speed rpm : 600 Rack travel in mm : 20.0 : 600 Testing: 1st rack travel in: 10.90 Speed rpm : 1240...1250 2nd rack travel in: 4.00 rpm : 1295...1325 Speed 4th rack travel in: 1450 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 6.1 Testing: : 100 Speed rom Minimum rack trave: 7.50 : 250 POTI Rack travel in mm : 6.00...6.20 Ameroid/Altitude Compensator Test 1st version Settina : 500 Speed חקרו Pressure hPa : -: 11.20...11.30 Rack travel mm Measurement 1/min: 500 Speed 2nd pressure hPa : 450 Rack travel in m: 11.50...11.60 3rd pressure hPa : 700 Rack travel in m: 11.90...12.00 START CUT-OUT 1/min: 200 (220) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 700 Del.quantity cm3/: 103.0...106.0 1000 s: (100.5...108.5) cm3 : 5.00 1000 s: (7.0) Spread

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/ : 78.0...80.0
1000 s: (76.0...82.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 10.90

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...140.0 1000 s: (127.0...143.0)

rpm : 1240...1250

LOW IDLE

Speed

Speed rpm : 250
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 12.0...16.0
1000 s: (9.5...18.5)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

## BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : CUM 3,3 a : 18.12.91 Edition : 24.10.90 Replaces Test oil : ISO-4113

Combination no. £ 9 400 083 449

Injection pump

Pump designation : PES6A1000320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1100A202209

: 9 420 083 201 Governer no.

Customer spec, information Customer : CUMMINS

: 6 CT 8.3 L Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)
Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

Difference ° CS : 3.00...4.00

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 10.30...10.40

Del.quantity cm3/: 9.0...9.2

100 s: (8.8...9.4)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.3)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100 Speed

90.0...92.0 Del.quantity

1000 : (88.0...94.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 85...93

Testing:

1st rack travel in: 9.30 Speed rpm : 1140...1150 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300

riom : 0.30...1.70Speed

LOW IDLE 1 Control Lever

position degrees: 62...70 Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.2

Testina:

Speed nom : 100 Minimum rack trave: 19.00 Speed rpm : 400
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00
Speed rpm : 540...600

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 10.30...10.40

2nd speed rpm : 500

Rack travel in m: 10.30...10.50

5th speed rpm : 400 Rack travel in m: 10.70...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : 74.0...77.0 1000 s: (71.5...79.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.30

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 135.0...149.0

1000 s: (132.0...152.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.60...5.80

Del.quantity cm3/: 16.5...20.5 1000 s: (14.0...23.0)

cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

BOSCH INJ. PUMP TEST SPECIFICATIONS : 1-5-3-6-2-4 Firing order Note remarks : DEZ 6,1 e : 18.12.91 Test sheet Phasing : 0-60-120-180-240-300 Edition Replaces Tolerance + - ° : 0.50 (0.75) Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 9 400 085 259 BASIC SETTING Injection pump Pump designation : PES6A80D410RS2755 1st speed rpm: 1400 : 9 400 093 005 EP type number Governor Rack travel in mm : 12.00...12.10 Governor design. : RS325/1400A0B2212L Governer no. : 9 420 083 205 Del.quantity cm3/: 6.9...7.0 Customer-spec. information 100 s: (6.7...7.1) Customer : DEUTZ ARGENTINA cm3 : 0.2 Spread Engine : F6L913 100 s: (0.4) 1st version kW : 104.5 : 2800 rpm : 325.0Rated speed 2nd speed Rack travel in mm: 8.4...8.6 Del.quantity cm3/: 0.9...1.2 TEST BENCH REQUIREMENTS 100 s: (0.8...1.4) cm3 : 0.2 100 s: (0.3) Test oil Spread inlet temp. °C : 38...42 Overflow valve GUIDE SLEEVE POSITION : 1 417 413 000 Control-lever position Degree: -3 rpm : 800 Inlet press., bar: 1.50 Rack travel in mm : 0.30...1.00 Test nozzle holder assembly : 0 681 343 009 Governor spring pre-tension Click setting x : 2.00Opening pressure, bar : 172...175 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Test lines : 1 680 750 003 Speed rpm : 1400: 69.0...70.0 Del.quantity 1000 Outside diameter : (67.5...71.5) x Wall thickness cm3 : 2.50 Spread 1000 : (4.00) x Length mm : 6.00X2.00X600 (A) Injection pump setting values RATED SPEED Insp. values in parentheses Set equal delivery quant. 1st version per values \_\_\_\_ Control lever position degrees: 51...59 BEGINNING OF DELIVERY Test pressure, bar: 25...27

Testing:

Speed

Speed

1st rack travel in: 11.00

2nd rack travel in: 4.00

rpm : 1440...1450

rpm : 1500...1530

K25

Prestroke mm

: 1.90...2.00

Rack travel in mm : 9.00...12.00

: (1.85...2.05)

4th rack travel in: 1600 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 24...32 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 8.5 Testing: Speed rpm : 280 Minimum rack trave: 8.80 Speed rpm : 325 Rack travel in mm : 8.40...8.60 Rack travel in mm: 6.00 rpm : 390...450 rpm : 550 Speed Speed Maximum rack trave: 4.40 TORQUE CONTROL Torque control curve - 1st version rpm : 1400 1st speed Rack travel in m: 12.00...12.10 rpm : 500 2nd speed Rack travel in m: 12.80...12.90 in speed rpm : 1100 Rack travel in m: 12.30...12.60 4th speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quantity cm3/ : 63.0...65.0 1000 s: (60.5...67.5) Speed rpm : 1100 Del.quantity cm3/: 66.0...68.0 1000 s: (64.0...70.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 11.00 rpm : 1440...1450 Speed STARTING FUEL DELIVERY

Speed rpm: 100 Rack travel in mm: 19.00...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : DEZ 6,1 f Test sheet : 18.12.91 Edition Replaces Test oil : ISO-4113 Combination no. : 9 400 085 293 Injection pump Pump designation : PES6A80D410RS2755 : 9 400 093 005 EP type number Governor Governor design. : RQV300...1400AB1234L : 9 420 080 241 Governer no. Customer-spec. information Customer : DEUTZ ARGENTINA : F & L 913 Engine TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder assembly : 0 681 343 009

Opening ressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness x Length mm

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_\_

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 1.90...2.00 : (1.85...2.05) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 6.9...7.0

100 s: (6.7...7.1)

Spread cm3 : 0.2

100 s: (0.4)

2nd speed rpm : 300.0 Rack travel in mm : 8.4...8.6 Del.quantity cm3/ : 0.8...1.1 100 s: (0.7...1.3) Spread cm3 : 0.2

pread cm3 : 0.2 160 s: (0.3)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL rpm : 1460 1st speed 8.40...8.60 travel mm 300 2nd speed rpm 0.70...1.20 travel mm 3rd speed 550 MCL travel mm 2.70...3.00 4th speed : 775 mgn : 4.10...4.60 travel mm

5th speed rpm: 950 travel mm: 5.20...5.50

GUIDE SLEE' E POSITION

Control-lever position
Degree: -1

Speed rpm : 1420
Rack travel in mm : 15 20

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1400

Del.quantity : 69.0...70.0 (67.5...71.5)

Spread cm3 : 2.50 1000 : (4.00)

RATED SPEED

1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 11.00 rpm : 1440...1450 Speed 2nd rack travel in: 4.00 rpm : 1570...1600 Speed 4th rack travel in: 1700 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 6...14 Setting point wout bunper spring rpm : 300 Rack travel in mm: 6.0 Testing: Speed rpm : 100 Minimum rack trave: 7.50 Speed : 300 rph Rack travel in mm : 5.90...6.10 CONSTANT REGULATION rpm : 400...500 Speed TORQUE CONTROL rpm : 1400 1st speed 2nd speed rpm : 500

Torque control curve - 1st version Rack travel in m: 12.00...12.10 Rack travel in m: 12.90...13.00 3rd speed rpm : 1000 Rack travel in m: 12.70...12.90 4th speed rpm : 1200 Rack travel in m: 12.20...12.50 START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Speed : 500 rom Del.quantity cm3/: 63.0...65.0

1000 s: (61.0...67.0)

Speed rpm : 1000

Del.quantity cm3/: 67.0...69.0 1000 s: (65.0...71.0)

BREAKAWAY

1st version 1mm rack travel less than full load rack tr: 11.00

rpm : 1440...1450 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Rack travel in mm : 19.00...21.00

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2 Note remarks : MB 4,0 h : 18.12.91 Test sheet Edition Phasing : 0-90-180-270 : 18.9.91 Replaces Test oil : ISO-4113 Tolerance + - ° : 0.50 (0.75) Combination no. : 9 400 085 307 BASIC SETTING Injection pump rpm : 13001st speed Pump designation : PES4A95D41DRS2774 EP type number : 9 400 084 019 Rack travel in mm : 10.60...10.70 Governor : RQV300...1300AB1228-Governor design. Del.quantity cm3/: 9.0...9.2 1L : 9 420 080 268 Governer no. 100 s: (8.8...9.4) Customer-spec. information Spread cm3 : 0.3Customer : MERCEDES-BENZ 100 s: (0.6) : OM 364 A Engine rpm : 300.0 2nd speed : 85.0 1st version kW Rack travel in mm: 6.9...7.1 : 2600 Del. quantity cm3/: 0.6...1.2 Rated speed 100 s: (0.4...1.4) TEST BENCH REQUIREMENTS Spread cm3 : 0.3100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 1 417 413 006 GUIDE SLEEVE TRAVEL 1st speed 300 rpm : Inlet press., bar: 1.50 : 0.80...1.30 travel mm rpm : 500 2rid speed : 2.30...2.80 : 750 Test nozzle holder travel mm : 0 681 343 009 assembly 3rd speed rpm : 4.10...4.30 travel mm Opening : 1500 4th speed rpm pressure, bar : 172...175 : 8.50...8.60 travel mm GUIDE SLEEVE POSITION Test Lines : 1 680 750 015 Control-lever position Degree: -1 rpm: 1500 Outside diameter Speed Rack travel in mm : 15.20...17.80 x Wall thickness : 6.00x1.50x600 x Length mm FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. rpm : 1300 Speed per values Aneroid pressure h: 700 : 90.0...92.0 Del.quantity 1000 : (88.0...94.0) cm3 : 3.50 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Spread 1000 : (6.00) Prestroke mm : 3.20...3.30 : (3.15...3.45)

RATED SPEED

1st version Control Lever

position degrees: 107...115

Testing:

1st rack travel in: 9.60

rom : 1360...1370 Speed

2nd rack travel in: 4.00

Speed rpm : 1490...1520

4th rack travel in: 1640

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 62...70

Testing:

Speed : 100 rpm Minimum rack trave: 8.00 : 300 rpin

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

Speed rom : 420...550

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.60...10.70

rpva : 800 2nd speed

Rack travel in m: 11.00...11.10

4th speed rpm : 1000

Rack travel in m: 10.80...11.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 700 Pressure

Rack travel mm : 11.00...11.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.50

2nd pressure hPa : 410 Rack travel in m: 10.60...10.80 3rd pressure hPa : 280

Rack travel in m: 9.70...9.80

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Ameroid pressure h: 700 : 800 Speed rpm

Del.quantity cm3/: 84.5...87.5

1000 s: (82.0...90.0)

Aneroid pressure h: 700

Speed rpm: 1000 Del.quantity cm3/: 87.5...90.5 1000 s: (85.0...93.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 52.0...54.0

1000 s: (50.0...56.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

rpm : 1360...1370 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...90.0

1000 s: (-)

Rack travel in mm: 12.90...13.10

Remarks:

L02

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 6,0 k Edition : 18.12.91 : 9.4.91 Replaces Test oil : ISO-4113

Combination no. : 9 400 985 316

Injection pump

Pump designation : PES6A95D41DRS2795 EP type number : 9 400 084 020

Governor

Governor design. : RQV300...1400AB1065-

18L

: 9 420 080 278 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 366 Engine

1st version kW : 100.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm: 9.90...10.00

Del.quantity cm3/: 6.8...7.0

100 s: (6.6...7.2)

Spread cm3 : 0.3

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.8...8.0 Del.quantity cm3/: 0.8...1.4 100 s: (0.6...1.6)

cm3 : 0.3Spread 100 s: (0.3)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1500 1st speed : 8.50...8.60 travel mm 2nd speed rpm : 300

travel mm : 0.80...1.30

3rd speed : 500 rpm

2.30...2.80 travel mm

4th speed : 750 rpm

travel mm : 4.10...4.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1500 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 68.5...70.5 Del.quantity

1000 : (66.5...72.5)

: 3.50 Spread cm3

: (3.50) 1000

RATED SPEED

1st version Control Lever position degrees: 106...114 Testing: 1st rack travel in: 8.90 Speed rpm : 1460...1470 2nd rack travel in: 4.00 Speed rpm : 1545...1575 4th rack travel in: 1680 rom : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 66...74 Testing: Speed : 100 riom Minimum rack trave: 8.00 : 300 rpm Rack travel in mm : 7.80 ... 8.00 CONSTANT REGULATION rpm : 480...630 Speed START CUT-OUT 1/min: 250 (270) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 50.0...53.0 1000 s: (47.5...55.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1460...1470 Speed STARTING FUEL DELIVERY Speed : 100 rpm

Speed rpm: 100
Del.quantity cm3/: 78.0...90.0
1000 s: (75.0...93.0)
Rack travel in mm: 14.00...14.20
Remarks:

:

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet : MB 4,0 i : 18.12.91 Edition : 9.4.91 Replaces Test oil : ISO-4113

Combination no. : 9 400 085 333

Injection pump

Pump designation : PES4A95D410RS2805 EP type number : 9 400 084 026

Governor

Governor design. : RQV300...1400AB1065-

21L

: 9 420 080 303 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 364 Engine

1st version kW : 66.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.60...9.70

Del.quantity cm3/: 7.0...7.2

100 s: (6.8...7.4)

Spread cm3 : 0.3

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 0.5...1.1 100 s: (0.3...1.3)

cm3 : 0.3Spread 100 s: (0.3)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1500 1st speed : 8.50...8.60 travel mm 2nd speed rpm : 300

travel mm : 0.80...1.30

3rd speed : 500 man

: 2.30...2.80 travel mm

4th speed : 750 rpm

: 4.10...4.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1500 Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Del.quantity : 70.0...72.0

1000 : (68.0...74.0)

Spread cm3 : 3.50

: (3.50) 1000

RATED SPEED

1st version Control lever position degrees: 106...114 Testing: 1st rack travel in: 8.60 rpm : 1460...1470 Speed 2nd rack travel in: 4.00 Speed rpm : 1540...1570 4th rack travel in: 1680 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 65...73 Testing: Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 7.40...7.60 CONSTANT REGULATION rpm : 480...630 Speed START CUT-OUT 1/min: 250 (270) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 700 Speed Del.quantity cm3/: 54.5...57.5 1000 s: (52.0...60.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.60 Speed rpm : 1460...1470 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 78.0...90.0 1000 s: (75.0...93.0) Rack travel in mm : 13.80...14.00 Remarks:

L06

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note remarks

Test sheet Edition

: MMM 6,5 a : 18.12.91

Replaces

: 3.6.91

Test oil

: ISO-4113

Combination no.

: 9 400 085 336

Injection pump

Pump designation : PES6A95D410RS2812

EP type number

: 9 400 084 028

Governor

Governor design. : RQV350...1400AB1261L

: 9 420 080 307 Governer no.

Customer-spec. information Customer : MMM

Engine

: D 610 / X-10

1st version kW

: 110.7

Rated speed

: 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Opening.

pressure, bar

: 172...175

Test Lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: D-60-120-180-240-300

Tolerance + - \*

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00

: 1.50...2.50 Difference \* CS

BASIC SETTING

1st speed

rpm: 1400

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 7.0...7.2

100 s: (6.8...7.4)

Spread

cm3 : 0.3

100 s: (0.6)

2nd speed

rpm : 350.0

Rack travel in mm: 5.3...5.7 Del.quantity cm3/: 0.9...1.3

100 s: (0.8...1.5)

Spread

cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed travel mm rpm : 1350

: 7.10...7.30

2nd speed

rpm : 300

travel mm

: 0.80...1.30

3rd speed

: 550

travel mm

: 2.50...3.00

4th speed

: 800 rpm

travel mm rpm

: 3.70...4.20 : 1500

5th speed travel mm

rpm

: 8.30...8.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1490

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

L07

1st version Speed rom : 1400 Del.quantity : 70.0...72.0 1000 : (68.0...74.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED 1st version Control Lever position degrees: 109...117 Testing: 1st rack travel in: 8.70 rpin : 1440...1450 Speed 2nd rack travel in: 4.00 rpm : 1525...1555 Speed 4th rack travel in: 1680 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 64...72 Testing: Speed : 100 rpm Minimum rack trave: 6.50 Speed rpm Rack travel in mm : 5.40...5.60 CONSTANT REGULATION Speed rpm : 350...500 TORQUE CONTROL Dimension a mm : 0.30 Torque control curve - 1st version 1st speed rpm : 1400 Rack travel in m: 9.70...9.80 nd speed rpm : 700 Rack travel in m: 10.00...10.10 2nd speed rpm : 1000 3rd speed Rack travel in m: 10.00...10.10 rpm : 1300 4th speed Rack travel in m: 9.70...9.80 START CUT-OUT 1/min : 270 (290) Speed FUEL DELIVERY CHARACTERISTICS 1st version rpm : 700 Speed Del.quantity cm3/: 61.0...64.0 1000 s: (58.5...66.5)

Speed rpm: 1000 Del.quantity cm3/: 70.5...73.5 1000 s: (68.0...76.0)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 8.70
Speed rpm : 1440...1450

STARTING FUEL DELIVERY

Speed rpm : 100

Speed rpm : 100 Rack travel in mm : 19.00...21.00 LOW IDLE

Speed rpm : 350
Rack travel in mm : 5.30...5.70
Del.quantity cm3/ : 9.5...13.5
1000 s: (8.0...15.0)
Spread cm3 : 3.50
1000 s: (5.50)

Remarks:

Note remarks

: MWM 6,5 a 1 : 18.12.91 Test sheet Edition Replaces : 3.6.91

Test oil : ISO-4113

Combination no. : 9 400 085 337

Injection pump

Pump designation : PES6A95D410RS2812 EP type number : 9 400 084 028

Governor

Governor design. : RQV350...1300AB1260L

: 9 420 080 306 Governer no.

Customer-spec. information Customer : MWM

Engine : TD 610 / X-10

: 143.9 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.75...2.85 : (2.70...2.90) Prestroke mm Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference ° CS : 1.50...2.50

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 9.3...9.5

100 s: (9.1...9.7)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm: 5.4...5.6 Del.quantity cm3/: 0.8...1.2

100 s: (0.7...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1350

7.10...7.30 travel mm

: 300 2nd speed rpm

travel mm : 0.80...1.30

3rd speed rpm : 550

travel mm : 2.50...3.00

4th speed rpm : 800 : 3.70...4.20 travel mm

5th speed : 1500 rpm

: 8.30...8.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1490 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st pressure hPa : -Speed rpm : 1300 Rack travel in m: 10.30...10.50 Aneroid pressure h: 800 2nd pressure hPa : 460 Del.quantity : 93.5...95.5 Rack travel in m: 11.70...12.00 1000 : (91.5...97.5) 3rd pressure hPa : 190 : 3.50 Rack travel in m: 10.70...10.80 Spread cm3 1000 : (6.00) START CUT-OUT RATED SPEED Speed 1/min : 270 (290) 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 107...115 Testina: 1st version 1st rack travel in: 11.00 Aneroid pressure h: 800 rpm : 1340...1350 Speed rpm : 800 Del.quantity cm3/: 94.0...97.0 1000 s: (91.5...99.5) 2nd rack travel in: 4.00 Speed rpm : 1490...1520 4th rack travel in: 1650 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 58.5...60.5 1000 s: (56.5...62.5) Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 63...71 BREAKAWAY Testing: Speed rpm : 100 1st version Minimum rack trave: 6.50 1mm rack travel less than Speed rpm : 350 Rack travel in mm : 5.40...5.60 full load rack tr: 11.00 rum : 1340...1350 Speed CONSTANT REGULATION Speed rpm : 350...500 STARTING FUEL DELIVERY TORQUE CONTROL Dimension a mm : 0.30 : 100 rpm Rack travel in mm : 19.00...21.00 Torque control curve - 1st version st speed rpm : 1300 Rack travel in m: 12.00...12.10 1st speed LOW IDLE rpm : 800 2nd speed Rack travel in m: 12.30...12.40 Speed rpm : 350 rpm : 850 Rack travel in mm : 5.40...5.60 3rd speed Rack travel in m: 12.30...12.40 Del.quantity cm3/: 8.5...12.5 1000 s: (7.0...14.0) rpm : 1150 4th speed Rack travel in m: 12.00...12.10 cm3 : 3.50 Spread 1000 s: (5.50) Aneroid/Altitude Compensator Test Remarks: : 1st version Setting : 500 Speed rpm hPa : 800 Pressure Rack travel mm : 12.30...12.40 Measurement 1/min: 500 Speed

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 6.0 k 1 : 18.12.91 Test sheet Edition Replaces : 26.6.91 Test oil : ISO-4113 Combination no. : 9 400 085 343 Injection pump Pump designation : PES6A950410RS2795 EP type number : 9 400 084 020 Governor : RQV300...1400AB1065-Governor design. 18L : 9 420 080 278 Governer no. Customer-spec. information Spread Customer : MERCEDES-BENZ : OM 366 Engine 1st version kW : 100.0 Rated speed : 2800 TEST BENCH REQUIREMENTS Spread Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Opening** pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter Speed x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Speed per values

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - \* : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1400 Rack travel in mm : 9.90...10.00 Del.quantity cm3/: 6.8...7.0 100 s: (6.6...7.2) cm3 : 0.3100 s: (0.3) rpm : 300.02nd speed Rack travel in mm: 7.8...8.0 Del.quantity cm3/: 0.8...1.4 100 s: (0.6...1.6) cm3 : 0.3 100 s: (0.3) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 1500 : 8.50...8.60 travel mm : 300 2nd speed rpm : 0.80...1.30 travel mm 3rd speed : 500 rpm : 2.30...2.80 travel mm : 750 4th speed rpm : 4.10...4.30 travel mm GUIDE SLEEVE POSITION Control-Lever position Degree: -1 rpm : 1500 Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1400 : 68.5...70.5 : (66.5...72.5) Del.quantity 1000 : 3.50 cm3 Spread 1000 : (3.50)

RATED SPEED

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

: 3.20...3.30

: (3.15...3.35)

1st version Control Lever position degrees: 106...114 Testing: 1st rack travel in: 8.90 rpm : 1460...1470 Speed 2nd rack travel in: 4.00 Speed rpm : 1545...1575 4th rack travel in: 1680 rpm : 0.00...1.0G Speed LOW IDLE 1 Control Lever position degrees: 66...74 Testing: rpm : 100 Speed Minimum rack trave: 8.00 Speed rpm : 300 Rack travel in mm : 7.80...8.00 CONSTANT REGULATION Speed rpm : 480...630 START CUT-OUT Speed 1/min: 250 (270) FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 50.0...53.0 1000 s: (47.5...55.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 Speed rpm : 1460...1470 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 78.0...90.0 1000 s: (75.0...93.0) Rack travel in mm : 14.00...14.20 Remarks:

#### Note remarks

Test sheet : SCA 14,2 j : 18.12.91 Edition Replaces : 26.3.90 Test oil : ISO-4113

Combination no. : 9 400 087 372

Injection pump

Pump designation : PE8P120A920/4LS7002T

EP type number : 9 400 087 054

Governor

Governor design.: RQV200...1000PA547-2

: 9 420 080 238 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

: DSC 14 07 Engine

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 7- 3- 4- 5-

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

### BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 225.8 2nd speed

Rack travel in mm : 4.7...4.9 Del.quantity cm3/ : 1.0...1.6

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

## (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

: 8.40...8.60 travel mm

2nd speed rpm : 225

: 1.20...1.60 travel mm

3rd speed rpm : 350

: 2.40...3.00 travel mm

4th speed rpm : 650

: 4.50...5.10 travel mm

5th speed rpm : 1150

: 9.80...10.20 travel mm

# GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1000

Rack travel in mm : 15.20...17.80

### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 600 Del.quantity: 187.0...189.0

1000 : (184.0...192.0)

Spread

cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 56...64

Testina:

1st rack travel in: 12.20

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1150...1180 4th rack travel in: 1250

Speed rom : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 6...14

Testina:

Speed rpm : 100 Minimum rack trave: 5.90

Speed : 225 mqn

Rack travel in mm : 4.40...4.60

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm hPa : 600 Pressure

Rack travel mm : 13.20...13.30

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 11.30...11.40

2nd pressure hPa : 355

Rack travel in m: 12.50...12.60

3rd pressure hPa : 260

Rack travel in m: 11.80...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 600

rpm : 1000 Speed

Del.quantity cm3/: 183.0...191.0 1000 s: (181.0...193.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 137.0...141.0

1000 s: (135.0...143.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : SCA 11,0 y4 Edition : 18.12.91 Replaces : 24.10.90 Test oil : ISO-4113 Combination no. : 9 400 037 440 Injection pump Pump designation: PE6P110A720RS3115-1 EP type number : 0 411 816 764 Governor Governor design. : RQV250...1100PA468 : 0 421 813 225 Governer no. Customer-spec. information Customer : SAAB-SCANIA Engine : DN 11-08 1st version kW : 158.0 : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00X1.50X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

Phasing : U-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm: 11.70...11.80 Del.quantity cm3/: 10.4...10.6 100 s: (10.2...10.8) cm3 : 0.5 Spread 100 s: (0.7) 2nd speed rpm : 250.0Rack travel in mm: 4.4...4.8 Del.quantity cm3/: 1.2...1.6 100 s: (0.9...1.8) cm3 : 0.2 Spread 100 s: (0.4) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 : 1.20...1.60 travel nm 2nd speed rpm : 350 : 2.40...3.00 travel mm 3rd speed : 650 rpm : 4.60...5.20 travel mm : 1145 4th speed rpm travel mm : 8.60...8.80 : 1255 5th speed rpm : 9.70...10.10 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1125 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 : 104.0...106.0 Del.quantity 1000 : (102.0...108.0) cm3 Spread : 5.00 1000 : (7.00)

Firing order

: 1-5-3-6-2-4

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 3.30...3.40 : (3.25...3.45)

### RATED SPEED

1st version Control lever

position degrees: 113...121

Testing:

1st rack travel in: 10.70

Speed rpm: 1140...1150 2nd rack travel in: 4.00

Speed rpm : 1240...1270 4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 62...70

Testing:

Speed rpm : 100 Minimum rack trave: 6.00 rpm : 250

Rack travel in mm : 4.40...4.60

Rack travel in mm : 2.00

: 360...420 Speed rom

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100 Del.quantity cm3/ : 110.5...115.5 1000 s: (108.0...118.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0

1000 s: (236.0...294.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Start-of-delivery setting with RO30 diaphragm.

I will have the same of the

Note remarks

Test sheet Edition

: DEE 7,6 h 5 : 18.12.91

Replaces

: 7.86

Test oil

: ISO-4113

Combination no.

: 9 400 230 035

Injection pump

Pump designation: PES6A100D410RS2676-1

EP type number

: 9 410 230 024

Governor

Governor design.

: RSV450...1100A2C2204

Governer no.

: 9 420 234 121

Customer-spec. information Customer

: JOHN DEERE

Engine

: 6466T

1st version kW

: 119.0

Rated speed

: 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

**Opening** 

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm

: 2.45...2.55

: (2.40...2.60) Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed

rpm: 1100

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

Spread

cm3 : 0.4

100 s: (0.6)

2nd speed

rpm : 450.0

Rack travel in mm : 5.4...5.6 Del.quantity cm3/: 1.7...2.1

100 s: (1.5...2.4)

Spread

Speed

cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100

99.5...101.5 1000 : (97.5...103.5)

Spread

Del.quantity

cm3

: 4.00

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 45...53

Testing:

1st rack travel in: 8.80

rpm : 1145...1155 Speed

2nd rack travel in: 4.00

: 1210...1220 Speed rpm

3rd rack travel in: 4.00

Speed : 1200...1230 CDM .

4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 450 Rack travel in mm : 5.0

Testina:

rpm : 100 Speed Minimum rack trave: 19.00

: 450 nom

Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 9.80...9.90

rpm : 500 2nd speed

Rack travel in m: 11.40...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

: 500 Speed **rom** 

Del.quantity cm3/: 114.0...118.0

1000 s: (112.0...120.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed : 1145...1155 man

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 190.0...210.0 1000 s: (185.0...215.0)

LOW IDLE

rpm : 450 Speed

Rack travel in mm: 5.40...5.60 Del.quantity cm3/: 17.5...21.5 1000 s: (15.0...24.0)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE19919

Start-of-delivery mark is at 15° angular displacement of the cam after start of delivery at cylinder 1 with control-rod travel 9.00...12.00 mm

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Prestroke mm : 2.80...2.90 : (2.75...2.95)
Rack travel in mm : 10.50 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks : 1-5- 3- 6- 2- 4 Firing order : CLM 8,3 b 7 : 18.12.91 Test sheet Edition : 1.2.90 Replaces : ISO-4113 Test oil Phasing : 0-60-120-180-240-300 Combination no. : 9 400 230 103 Tolerance + - \* : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PES6A100D410RS2691-2 EP type number : 9 410 230 028 BASIC SETTING Governor Governor design. : RQV350...1100AB1227R 1st speed rpm : 1100Governer no. : 9 420 231 015 Rack trave! in mm : 12.60...12.70 Customer-spec, information Customer : C.D.C. Del.quantity cm3/: 12.5...12.7 : 6 CT 8.3 100 s: (12.3...12.9) Engine : 156.6 1st version kW Spread cm3 : 0.4: 2200 Rated speed 100 s: (3.5) TEST BENCH REQUIREMENTS 2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.8...2.2 Test oil inlet temp. °C : 38...42 100 s: (1.5...2.4) Overflow valve Spread cm3 : 0.6: 1 417 413 047 100 s: (0.8) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1100 : 7.70...7.70 **Opening** travel mm : 207...210 rpm : 1150 pressure, bar 2nd speed : 8.00...8.60 travel mm Orifice plate 3rd speed rpm : 1290 diameter mm : 0,6 9.50...10.10 travel mm 4th speed 350 mon : 1.20...1.60 travel mm Test lines : 1 680 750 014 5th speed rpm : 600 travel mm : 3.90...4.50 Outside diameter x Wall thickness FULL LOAD DELIV. AT FULL LOAD STOP : 6.00X2.00X600 x Length mm 1st version (A) Injection pump setting values rpm : 1100 Speed Insp. values in parentheses Aneroid pressure h: 900 : 125.5...127.5 1000 : (123.5...129.5) Set equal delivery quant. Del.quantity per values \_\_\_\_ : 4.00 Spread cm3 BEGINNING OF DELIVERY 1000 : (6.50)

RATED SPEED

Test pressure, bar: 27...29

1st version Control lever

position degrees: 60...68

Testing:

1st rack travel in: 11.60

Speed rpm: 1145...1155 2nd rack travel in: 4.00

rpm : 1260...1290 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 9...17 Speed rpm : 350 Rack travel in mm : 5.40...5.60

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 ron hPa : 900 Pressure

Rack travel mm : 12.60...12.70

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.10...10.30

2nd pressure hPa : 405

Rack travel in m: 10.90...11.00 3rd pressure hPa : 535 Rack travel in m: 11.80...12.20

START CUT-OUT

Speed

1/min : 260 (280)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 81.0...85.0

1000 s: (79.0...87.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

Speed

rpm : 1145...1155

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0 1000 s: (145.0...175.0)

Rack travel in mm : 15.30...15.70

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 5.40...5.60

Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3912645

Limit shutoff stop screw to 1.0 mm.

Start-of-delivery mark is at 7° after

start of delivery.

#### Note remarks

: CUM 8,3 b15 : 18.12.91 Test sheet Edition

Replaces

Test oil : ISO-4113

: 9 400 230 107JE Combination no.

Injection pump

Pump designation: PES6A100D320/3RS2691

EP type number : 9 410 230 028

Governor

Governor design. : RQV350...1200AB1233R

Governer no. : 9 420 231 018

Cust. part no. : 3917976

Customer-spec. information Customer : CDC

Engine : 6 CT 830

1st version kW : 155.0 : 2400 Rated speed

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.85) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

#### BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 11.3...11.4

100 s: (11.1...11.7)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 1.7...2.1 100 s: (1.4...2.3)

Spread cm3 : 0.6100 s: (0.8)

## (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 0.60...1.10

2nd speed rpm : 460

travel mm : 1.40...1.90

rpm : 510 3rd speed

: 1.70...2.20 travel mm rpm : 870 4th speed

: 3.40...3.90 travel mm

: 1250 5th speed rpm

: 6.50...7.00 travel mm

# GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1490 Speed

Rack travel in mm : 8.50...11.10

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Rack travel in m: 10.30...10.70 rpm : 1200 Speed Aneroid pressure h: 1200 START CUT-OUT : 113.5...114.5 1000 : (111.0...117.0) Del.quantity Speed 1/min : 290 (300) : 4.00 Spread cm3 1000 : (6.50) FUEL DELIVERY CHARACTERISTICS RATED SPEED 1st version 1st version Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 86.0...87.0 Control Lever position degrees: 41...49 1000 s: (83.5...89.5) Testing: 1st rack travel in: 9.80 rpm : 1240...1250 **BREAKAWAY** 2nd rack travel in: 4.00 rpm : 1315...1345 Speed 1st version 4th rack travel in: 1400 1mm rack travel less than 1000 : 0.00...1.00Speed full load rack tr: 9.80 LOW IDLE 1 rpm : 1240...1250 Speed Control lever position degrees: 9...17 STARTING FUEL DELIVERY Testing: Speed rpm Speed rpm : 100 Del.quantity cm3/: 155.0...165.0 1000 s: (152.0...168.0) Minimum rack trave: 6.00 rpm : 350 Speed Rack travel in mm : 4.60...4.80 Rack travel in mm : 19.50...21.00 Rack travel in mm: 2.00 Speed rpm : 440...500 Remarks: TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 10.80...10.90 2nd speed rpm : 500 Rack travel in m: 10.80...11.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1200 Pressure Rack travel mm : 10.80...10.90 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 9.40...9.50 2nd pressure hPa : 260 Rack travel in m: 9.90...10.00

3rd pressure hPa : 345

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: MB 5,7 n 13 : 18.12.91 Test sheet Edition : 19.9.86 Replaces Test oil : ISO-4113

Combination no. : 9 407 083 270

Injection pump

Pump designation : PES6A90D410RS2293 EP type number : 0 410 896 031

Governor

Governor design. : RQV300...1400AB740-1

: 9 420 080 153 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M352-A Engine

1st version kW : 117.8 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.15...2.25

: (2.10...2.30)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 11.00...11.10

Del.quantity cm3/ : 7.1...7.2

100 s: (6.9...7.4)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0 Rack travel in mm: 7.4...7.6 Del.quantity cm3/: 0.8...1.4 100 s: (0.7...1.5)

Spread cm3 : 0.2100 s: (0.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1460 8.40...8.60 travel mm 2nd speed : 300 rpm

: 0.70...1.20 travel mm 3rd speed : 550 rpm

: 2.70...3.00 travel mm

4th speed : 775 rpm travel mm 4.10...4.60

5th speed 950 rpm : 5.20...5.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1420 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 71.0...72.0 Del.quantity

1000 : (69.0...74.0)

: 3.00 Spread cm3 1000 : (5.00)

# RATED SPEED 1st version Control lever position degrees: 54...62 Testing: 1st rack travel in: 10.00 rpm : 1440...1450 Speed 2nd rack travel in: 4.00 Speed rpm : 1555...1585 4th rack travel in: 1700 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 10...18 Testing: Speed rpm : 100 Minimum rack trave: 9.00 Speed rpm : 300 Rack travel in mm : 7.40...7.60 CONSTANT REGULATION rpm : 320...550 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 500 Del.quaritity cm3/ : 52.5...55.5 1000 s: (50.5...57.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.00 rpm : 1440...1450 Speed STARTING FUEL DELIVERY

rpm : 100 Del.quantity cm3/ : 73.0...83.0

Rack travel in mm: 13.70...14.10

1000 s: (70.0...86.0)

L24

Speed

Remarks:

Note inst. in remarks column

: FIA 2,5 A1 : 03.02.92 Test scheet Edition replaces : 09.12.91 Calibrating oil : ISO-4113

Injection pump : VE4/11F2100R286-1 : 0 460 414 059 Type number

Customer Part-No. :

Customer-specific information Customer : FIAT-AUTO

Engine : M711 AT 19.0

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating rozzle holder

: 1 688 901 027 assembly

Opening |

bar: 250.00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery Prestroke mm: -(from BDC): -

Indicator setting Piston stroke mm: 1.0 Outlet

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1500 Speed Charge press. hPa: 1000

Setting value mm: 6.60...7.00

AFB/AFB

Volt: 12 valve

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1500 Speed Charge press hPa: 1000

Setting value bar: 7.30...7.90

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12

Full-load del. with charge press .:

1/min: 1750 Speed Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 47.30...48.30

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 3.0 1000s.: (3.0)

Full-load del. w/out charge press.:

1/min: 750 Speed

Del. quantity cm3/

1000s.: 23.30...24.30

KSB/AFB Volt: 12 valve

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 450 Del. quantity cm3/ 1000s.: 6.00...10.00

KSB/AFB

valve Volt: 12

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 3.0 1000s.: (3.5)

Full-load speed regulation

1/min: 2400 Speed Charge press hPa: 1000 Del. quantity cm3/

1000s.: 17.00...23.00

KSB/AFB		+	TD travel	mm:	2.503.30
valve Volt:	12	+		mm:	(2.003.80)
Shutoff		+	KSB/AFB		
electromagnet Volt:	12	+		Volt:	12
		+	Shutoff		
Start:		+	electromagnet 1	Volt:	12
		+	8th speed 1	/min:	1000
Speed 1/min:		+	Charge press.	hPa:	
Del. quantity cm3/:	40.0080.00	+	TD travel	mm:	3.205.20
mind 1000s.:	40.00	+		nen:	(3.005.40)
KSB/AFB		+	KSB/AFB		
Valve Volt:	12	+	valve	Volt:	-
Shutoff		+	Shutoff		
electromagnet Volt:	12	+	electromagnet \	Volt:	12
3		+	9th speed 1.	/min:	450
Load-dependent start	t of delivery:	+	Charge press.		
Injqty.dif.measure		+	TD travel	mm:	3.303.50
		+		mm:	(2.404.40)
Speed 1/min:	1750	1	KSB/AFB	118410	
Charge press hPa:		+		Volt:	unio .
Injqty. cm3/		+	Shucoff		
difference 1000s.:	9.0015.00 *	1	electromagnet '	init.	12
KSB/AFB	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1	o to o troining for		
valve Volt:	12	1	Supply-numb no	acci ind	characteristic:
Shutoff	16	1	appear baile by	cooul (	cilai accel 13cic.
electromagnet Volt:	12	1	1st speed 1.	lmin.	1500
TD-travel dif.measur		I	Charge press.		
correttore anticipo		Ι	Supply-pump	IIra,	1000
1. Speed 1/min:	1750	Ι	pressure	han	7.307.90
Charge press hPa:		Ι	pi casul e		(7.108.10)
TD-travel		T	KSB/AFB	par:	(7.100.10)
	0.500.70 *	T		1-14-	12
difference mm: KSB/AFB	0.300.70 ×	T		volt:	12
valve Volt:	13	T	Shutoff	1-14.	45
Shutoff Vott:	12	T	electromagnet	volt:	2400
	10	Ť	2nd speed 1.		
electromagnet Volt:	12	Ť	Charge press.	nra:	1000
Toponation with too	ifications	T	Supply-pump	h	0 50 0 40
Inspection pump test		†	pressure		8.509.10
Test specifications	in parentneses	†	VCD /ATD	par:	(8.309.30)
Timing day it a charact		†	KSB/AFB	1.14.	12
Timing-device charac	cteristic:	†		Volt:	12
Ond mand 1/min.	2400	†	Shutoff	1-14.	42
2nd speed 1/min:		<b>†</b>	electromagnet	voit:	70
	1000	†	3rd speed 1.		
	9.3010.10	†	Charge press.	nra:	1000
	(8.8010.60)	†	Supply-pump	<b>l</b> a .	E ED / 40
KSB/AFB	43	†	pressure		5.506.10
valve Volt:	12	†	1400 / 1400	bar:	(5.306.30)
Shutoff	43	†	KSB/AFB		40
electromagnet Volt:		+		Volt:	72
3rd speed 1/min:		†	Shutoff	4 1 .	45
	1000	†	electromagnet \	volt:	14
TD travel im:	6.607.00	+			
	(6.307.30)	†	Overlow quanti	ty at	overflow valve:
KSB/AFB	40	+			100
valve Volt:	12	†		/min:	
Shutoff	45	+	Charge press.	hPa:	1000
electromagnet Volt:	12	+	KSB/AFB		4.6
4th speed 1/min:		+	valve	Volt:	12
Charge press hPa:	1000	+			

Shutoff		1	KSB/AFB	
electromagnet Volt: 1	12	I	valve Volt:	12
Overflow : 7	75.00119.540	1	Shutoff	
quantity cm3/10s:	(60.00134.50)	+	electromagnet Volt:	12
2nd speed 1/min: 2		1	Del. quyntity cm3/:	47.3048.30
Charge press. hPa: 1		+	1000s.:	(45.8049.80)
KSB/AFB		+	13th speed 1/min:	
valve Volt: 1	12	+	Charge press. hPa:	
Shutoff		+	KSB/AFB	
electromagnet Volt: 1	12	+	valve Volt:	12
Overflow : 9	97.30180.70	+	Shutoff	
quantity cm3/10s:	(82.30195.70)	+	electromagnet Volt:	12
		+	Del. quantity cm3/:	45.5049.50
Delivery-quant. and b	breakaway char.:	+	1000s.:	
		+	18th speed 1/min:	
And an and Admition	700.	+	Charge press. hPa:	-
1nd speed 1/min: 7		†	KSB/AFB	40
Charge-air pressure-s	setting 100	†	valve Volt:	12
point hPa: 4 LDA-stroke mm: 6		†	Shutoff	10
LDA-stroke mm: 6 KSB/AFB	0.3	†	electromagnet Volt:	12 27 70 2/ 70
valve Volt: 1	12	†	Del. quantity cm3/:	(21.3026.30)
Shutoff	12	T	20th speed 1/min:	750
electromagnet Volt: 1	12	T	Charge press. hPa:	1000 1000
Del. quantity cm3/: 3	32 50 33 50	I	KSB/AFB	1000
10005	(28.0038.00)	I	valve Volt:	12
3rd speed 1/min: 2		Ι	Shutoff	1 to
Charge press. hPa:		1	electromagnet Volt:	12
KSB/AFB		1	Del. quantity cm3/:	45,50,47,50
valve Volt: 1	12	1	1000s.:	-
Shutoff	_	1	21th speed 1/min:	
electromagnet Volt: 1	12	+	Charge press. hPa:	
Del. quantity cm3/: (	0.006.00	+	KSB/AFB	
1 <b>000</b> S.: -	<del>-</del>	+	valve Volt:	12
5th speed 1/min: 2		+	Shutoff	
Charge press. hPa: 1	1000	+	electromagnet Volt:	12
KSB/AFB	4.0	+	Del. quantity cm3/:	17.020.00
valve Volt: 1	12	+	1900s.:	
Shutoff	4.3	+		
electromagnet Volt: 1	12	†	Mech. shutoff:	
Del. quantity cm3/: 1	17.0025.00	†	F' - 4 - 16 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 -	
	(16.0024.00)	†	Electr. shutoff:	
8th speed 1/min: 2 Charge press. hPa: 3	2 <i>3</i> 00 1000	<b>†</b>	1st speed 1/min:	<b>/5</b> (3)
KSB/AFB	1000	I	Del. quantity cm3/:	
valve Volt: 1	12	I	1000s.:	-
Shutoff	16	I	Shutoff	
electromagnet Volt:	12	1	electromagnet volt:	
Del. quantity cm3/: 2	27.0035.00	1	cecott omagnet votet	
10005.: -	_	1	Idle delivery:	
9th speed 1/min: 2	2100	1	24.0 40.1 (0.7)	
Charge press. hPa:		1	1st speed 1/min:	450
KSB/AFB		+	KSB/AFB	
valve Volt: 1	12	+	valve Volt:	12
Shutoff		+	Shutoff	
electromagnet Volt:		+	electromagnet Volt:	
Del. quantity cm3/: 4	45.5048.50	+	Del. quantity cm3/:	
	(43.8050.20)	+		(3.5012.50)
12th speed 1/min: 1		+	Dispersion cm3/:	
Charge press. hPa: 1	1000	+	1000s.:	(3.5)

1/min: 800 2nd speed KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...2.40 1000s.: -3rd speed 1/min: 600 KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: -Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1750 1st speed Inj.-qty. cm3/ : 11.0...13.0 # difference 1000s.: -KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 SP press.—dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1750 Supply pump-: 0.50...0.70 # pressure difference bar: -KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 2nd speed 1/min: 450 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...55.00 1000s.: -1/min: 100 4th speed KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 40.00...80.00 1000s.: -Shutoff electromagnet: Cut-in min voltage : 10,0

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm: 3,2...3,4 mm: - mm: 0.6...1.0 mm: 6,3 kK nm: 17.G...19.0

Remarks:

XL.

Overflow restriction 0.75 mm - Part No. ..343,..344

mm: 10.3...13.7

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

L28

Note inst. in remarks column

: CUM 5.9 U12 Test scheet Edition : 22.01.92 : 09.11.88 replaces Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R296-1 Type number : 0 460 426 106

Customer Part-No. :

Customer—specific information

Customer : CDC

Engine : 6 BTA- 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250.00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Prestroke mm: 0.3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.04)

Outlet : D

Injection-pump setting values Test specifications in parentheses

Timing-device travel

Speed 1/min: 900 Charge press. hPa: 1000

Setting value mm: 1.00...1.40

Shutoff

electromagnet Volt: 12

Supply—pump pressure

1/min: 900 Speed hPa: 1000 Charge press

Setting value bar: 4.10...4.70 Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 750 Speed Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 91.50...92.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500

Del. quantity cm3/

1000s.: 43.50...44.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/

1000s.: 15.00...21.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

1/min: 1160 Speed Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 61.00...67.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 65.00...105.00

1000s.: 65.00

Shutoff

electromagnet Volt: 12

Test specifications		overflow : quantity cm3/10s:	(40.60153.00)
Timing-device charac	teristic:	Delivery-quant. and	breakaway char.
2nd speed 1/min:	1100		
		1nd annual 1/mins	7004
	1.702.50	1nd speed 1/min:	
		Charge-air pressure	-setting
	(1.402,80)	point hPa:	
Shutoff	12		7.5
electromagnet Volt:		Shutoff	40
3rd speed 1/min:		electromagnet Volt:	12
Charge press hPa:		Del. quantity cm3/:	76.5077.50
TD travel mm:	1.001.40		(73.0081.00)
	(0.501.90)	2nd speed 1/min:	
Shutoff	+	Charge press. hPa:	1000
electromagnet Volt:		Shutoff	
4th speed 1/min:		electromagnet Volt:	
Charge press hPa:		Del. quantity cm3/:	0.003.00
TD travel mm:	0.100.90		(0.003.00)
mn:	(0.001.20)	3rd speed 1/min:	1180
Shutoft	1	Charge press. hPa:	
electromagnet Volt:	12 +	Shutoff	, , , , ,
		electromagnet Volt:	12
Supply-pump pressure	characteristic:	Del. quantity cm3/:	
a the system of the second		10005	(15.0055.00)
1st speed 1/min:	500 1	5th speed 1/min:	
Charge press. hPa:		Charge press. hPa:	
Supply-pump	1	Shutoff	1000
	2.403.00 I	electromagnet Volt:	12
	(2,203.20)	Del. quantity cm3/:	
Shutoff	(2,203.20)		
electromagnet Volt:	12 T		(58.0070.00)
2nd speed 1/min:		9th speed 1/min:	
Change page 1/11/11:	1000	Charge press. hPa:	1000
Charge press. hPa:	1000	Shutoff	40
Supply-pump	/ 10 / 70	electromagnet Volt:	75 00 70 00
	4.104.70	Del. quantity cm3/:	75.0078.00
	(3.904.90)		(73.5079.50)
Shutoff	4.	10th speed 1/min:	
electromagnet Volt:	12 +	Charge press. hPa:	1000
3rd speed 1/min:		Shutoff	4.5
Charge press. hPa:	1000 +	electromagnet Volt:	
Supply-pump	T 00 T 10	Del. quantity cm3/:	
	5.005.60		(80.5087.50)
	(4.805.80)	12th speed 1/min:	
Shutoff	+	Charge press. hPa:	1000
electromagnet Volt:	12 +	Shutoff	
	+	electromagnet Volt:	12
Overlow quantity at	overflow valve: +	Del. quyntity cm3/:	91.5092.50
	+	1000s.:	(89.0095.00)
1st speed 1/min:	500 +	18th speed 1/min:	500
Charge press. hPa:	- +	Shutoff	
Shutoff	+	electromagnet Volt:	12
electromagnet Volt:	12 🗼	Del. quantity cm3/:	
	41.7083.40		(40.0048.00)
quantity cm3/10s:			
2nd speed 1/min:		Mech. shutoff:	
Charge press. hPa:		Mech. Abstellung:	
Shutoff	1		
electromagnet Volt:	12 🗼	1st speed 1/min:	1100

Charge press. hPa: 1000

Del. quantity cm3/: 0.00...3.00

1000s.: (0.00...3.00)

Shutoff

electromagnet volt: 12

Electr. shutoff:

1st speed 1/min: 375
Del. quantity cm3/: 0.00...3.00

1000s.: (0.00...3.00)

Shutoff

electromagnet volt: -

Idle delivery:

1/min: 375 1st speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 15.00...21.00

1000s.: (13.00...23.00)

cm3/: 5.5 Dispersion

1000s.: (7.0) 1/min: 500

2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250

Shuto ff

electromagnet Volt: 12

Del. quantity cm3/: 65.00...115.00 1000s.: (65.00...115.00)

2nd speed 1/min: 350

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 30.00...70.00

1000s.: (30.00...70.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 65.00...105.00 1000s.: (65.00...105.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm: -

KF mm: 5.0...5.4

M03

mm: -SVS max. mm: 3.0 mm: 7.5 LDA stroke

mm: 18.8...20.8 XK XI. mm: 10.4...13.8

Remarks:

: C.D.C. # 391 2133

Operate control lever after each marifold pressure compensator pressure change.

\* Correction at adjusting nut (46)

Heavy-dury fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal jacket

Note inst. in remarks column

Test scheet : CUM 5.9 U49 Edition : 23.01.92

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F110CR296-1 Type number : 0 460 426 106

Customer Part-No.: 391 6108

Customer-specific information

Customer : CDC

: 6 BTA- 590 I Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Openina

bar: 250.00...253.00 Pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.06)

Outlet : D

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 900 Speed

Charge press. hPa: 1000

Setting value mm: 1.00...1.40

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900 Charge press hPa: 1000

Setting value bar: 4.10...4.70 Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 750 Charge press. hPa: 1000

Del. quantity cm3/

1000s.: 89.00...90.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

Speed 1/min: 500

Del. quantity cm3/ 1000s.: 52.00...53.00

Shutoff electromagnet Volt: 12

Low-idle speed regulation

1/min: 375

Del. quantity cm3/ 1000s.: 15.00...21.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.5 1000S.: (7.0)

Full-load speed regulation

1/min: 1160 Speed Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 55.50...61.50

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 65.00...105.00

1000s.: 65.00 mind

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications

MO4

Test specifications in parentheses Delivery-quant. and breakaway char.: Timing device characteristic: 2nd speed 1/min: 1100 1nd speed 1/min: 700\* Charge-air pressure-setting point hPa: 550 hPa: 1000 Charge press mm: 1.70...2.50 TD travei mm: (1.40...2.80) mm: 5.6 LDA-stroke Shutoff Shutoff electromagnet Volt: 12
3rd speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 1.00...1.40 electromagnet Volt: 12
Del. quantity cm3/: 89.50...90.50
1000s.: (86.00...94.00)
2nd speed 1/min: 1240 Charge press. hPa: 1000 Shutoff mm: (0.50...1.90) Shutoff electromagnet Volt: 12 4th speed 1/min: 750 Charge press hPa: 1000 electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000S.: (0.00...3.00) 3rd speed 1/min: 1180 Charge press. hPa: 1000 Shutoff mm: 0.10...0.90 mm: (0.00...1.20) TD travel Shutoff electromagnet Volt: 12 Supply-pump pressure characteristic: Charge press. hPa: 1000 Shutoff 1st speed 1/min: 500 Charge press. hPa: 1000 electromagnet Volt: 12 Del. quantity cm3/: 55.50...61.50 1000s.: (52.50...64.50) Supply-pump bar: 2.40...3.00 bar: (2.20...3.20) pressure Shutoff 1/min: 1100 9th speed electromagnet Volt: 12 2nd speed 1/min: 900 Charge press. hPa: 1000 Shutoff Charge press. hPa: 1000 Supply-pump pressure bar: 4.10...4.70 bar: (3.90...4.90) Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 3rd speed 1/min: 1100 electromagnet Volt: 12
Del. quantity cm3/: 79.00...82.00
1000S.: (77.00...84.00)
12th speed 1/min: 750
Charge press. hPa: 1000
Shutoff Charge press. hPa: 1000 Supply-pump bar: 5.00...5.60 pressure bar: (4.80...5.80) Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 89.00...90.00 1000s.: (86.50...92.50) electromagnet Volt: 12 Overlow quantity at overflow valve: 1/min: 500 18th speed 1/min: 500 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 52.00...53.00 1000s.: (48.50...56.50) Shutoff electromagnet Volt: 12 : 41.70...83.40 cm3/10s: (26.70...98.40) 1/min: 1100 Overflow quantity 2nd speed Mech. shutoff: Charge press. hPa: 1000 Mech. Abstellung: Shutoff electromagnet Volt: 12 1st speed 1/min: 1100 : 55.60...139.00 Overflow Charge press. hPa: 1000

quantity cm3/10s: (40.60...153.00)

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00)

Shutoff

electromagnet volt: 12

Electr. shutoff:

1/min: 375 1st speed

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00)

Shutoff

electromagnet volt: -

Idle delivery:

1st speed 1/min: 375

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 15.00...21.00

1000s.: (13.00...23.00) cm3/: 5.5

Dispersion

1000s.: (7.0) 1/min: 500 2nd speed

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 0.00...4.00 1000s.: (0.00...4.00)

Automatic starting fuel delivery:

1st speed 1/min: 250

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 65.00...115.00 1000s.: (65.00...115.00)

1/min: 350 2nd speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 30.00...70.00 1000s.: (30.00...70.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 65.00...105.00 1000S.: (65.00...105.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0

Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K

**KF** mm: 5.0...5.4

MS nm: -

M06

SVS max. mm: 3.0 LDA stroke

mm: 5.6 mm: 10.8...20.8 XK XL mm: 10.4...13.8

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Heavy-duty fuel-injection pump for DI-engines: only test using timingdevice-travel measuring device with metal iacket

Note inst. in remarks column

: CUM 5.9 U48 Test scheet Edition : 23.01.92

replaces

Calibrating oil : ISO-4113

Injection pump : VE6/12F1100R296-1 Type number : 0 460 426 105 Customer Part-No. : 391 6109

Customer-specific information

Customer

Engine

: 6 BTA- 590 I

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar: 250.00...253.00 Pressure

Perforated plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +0.02(0.04)

Start of delivery block Piston stroke mm: 1.85

mm: +-0.02(0.06)

Outlet

Injection-pump setting values Test specifications in parentheses

Timing device travel

1/min: 900 Speed

Charge press. hPa: 1000

mm: 1.00...1.40 Setting value

Shutoff

electromagnet Volt: 24

Supply-pump pressure

Speed 1/min: 900

Charge press hPa: 1000 Setting value bar: 4.10...4.70

Shutofi

electromagnet Volt: 24

Full-load del. with charge press.:

Speed 1/min: 750 Charge press. hPa: 1000 Del. quantity cm3/ 1000S.: 89.00...90.00

Shutoff

electromagnet Volt: 24 Dispersion cm3/: 4.0 1000s.: (4.5)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/ 1000s.: 52.00...53.00

Shutoff

electromagnet Volt: 24

Low-idle speed regulation

Speed 1/min: 375

Del. quantity cm3/ 1000s.: 15.00...21.00

Shutoff

electromagnet Volt: 24 Del. quantity cm3/: 5.5 1000s.: (7.0)

Full-load speed regulation

Speed 1/min: 1160 Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 55.50...61.50

Shutoff

electromagnet Volt: 24

Start:

1/min: 100

Del. quantity cm3/: 65.00...105.00 mind 1000s.: 65.00

Shutoff

electromagnet Volt: 24

Inspection-pump test specifications

M07

Test specifications in parentheses Delivery-quant. and breakaway char.: Timing-device characteristic: Charge press hPa: 1000 TD travel 1/min: 700\* 1nd speed Charge-air pressure-setting point hPa: 550 LDA-stroke mm: 5.6 mm: 1.70...2.50 mm: (1.40...2.80) Shutoff Shutoff electromagnet Volt: 24
3rd speed 1/min: 900
Charge press hPa: 1000
TD travel mm: 1.00...1.40
mm: (0.50...1.90) electromagnet Volt: 24
Del. quantity cm3/: 89.50...90.50
1000s.: (86.00...94.00)
2nd speed 1/min: 1240 Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 24
Del. quantity cm3/: 0.00...3.00
1000S.: (0.00...3.00)
3rd speed 1/min: 1180
Charge press. hPa: 1000
Shutoff electromagnet Volt: 24 4th speed 1/min: 750 Charge press hPa: 1000 mm: 0.10...0.90 mm: (0.00...1.20) TD travel Shutoff electromagnet Volt: 24
Del. quantity cm3/: 15.00...55.00
1000s.: (15.00...55.00) electromagnet Volt: 24 Supply-pump pressure characteristic: 1/min: 1160 5th speed Charge press. hPa: 1000 Shutoff 1st speed 1/min: 500 Charge press. hPa: 1000 electromagnet Volt: 24
Del. quantity cm3/: 55.50...61.50
1000S.: (52.50...64.50)
9th speed 1/min: 1100
Charge press. hPa: 1000
Shutoff Supply-pump bar: 2.40...3.00 bar: (2.20...3.20) pressure Shutoff electromagnet Volt: 24 2nd speed 1/min: 900 Charge press. hPa: 1000 Supply-pump pressure bar: 4.10. electromagnet Volt: 24 Del. quantity cm3/: 73.00...76.00 1000\$:: (71.50...77.50) bar: 4.10...4.70 tuch speed 1/min: 900 Charge press. hPa: 1000 Shutoff bar: (3.90...4.90) Shutoff electromagnet Volt: 24 3rd speed 1/min: 1100 Charge press. hPa: 1000 electromagnet Volt: 24
Del. quantity cm3/: 79.00...82.00
1000S.: (77.00...84.00)
12th speed 1/min: 750 Supply-pump pressure bar: 5.00...5.60 12th speed Charge press. hPa: 1000 Shutoff bar: (4.80...5.80) Shutoff electromagnet Volt: 24
Del. quyntity cm3/: 89.00...90.00
1000S.: (86.50...92.50)
18th speed 1/min: 500 electromagnet Volt: 24 Overlow quantity at overflow valve: 1st speed Shutoff 1/min: 500 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 52.00...53.00 1000s.: (48.50...56.50) electromagnet Volt: 24 : 41.70...83.40 quantity cm3/10s: (26.70...98.40) 2nd speed 1/min: 1100 Charge press. hPa: 1000 Mech. shutoff: Mech. Abstellung: Shutoff 1st speed 1/min: 1100 Charge press. hPa: 1000 electromagnet Volt: 24 Overflow : 55.60...139.00 quantity cm3/10s: (40.60...153.00)

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: 24 Electr. shutoff: 1/min: 375 1st speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet volt: -Idle delivery: 1/min: 375 1st speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 15.00...21.00 1000\$.: (13.00...23.00) cm3/: 5.5 1000\$.: (7.0) 1/min: 500 Dispersion 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 0.00...4.00 1000s.: (6.60...4.00) Automatic starting fuel delivery: 1/min: 250 1st speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 65.00...115.00 1000s.: (65.00...115.00) 1/min: 350 2nd speed Shutoff electromagnet Volt: 24 Del. quantity cm3/: 30.00...70.00 1000s.: (30.00...70.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 24 Del. quantity cm3/: 65.00...105.00 1000s.: (65.00...105.00) Shutoff electromagnet: Cut-in min voltage : 20.0 : 24.0 Rated voltage Mounting and assembly dimensions: Designation

mm: 5.0...5.4

mm: -

K KF

MS

M09

SVS max. mm: 3.0 mm: 5.6 mm: 18.8...20.8 mm: 10.4...13.8

#### Remarks:

Operate control lever after each manifold-pressure compensator pressure change.

\* Correction at adjusting nut (46)

Heavy-duty fuel-injection pump for DI-engines: only test using timing-device-travel measuring device with metal jacket

Note inst. in remarks column

Test scheet : NIS 6.6 A Edition : 30.01.92

replaces

Calibrating oil : ISO-4113

: VE6/12F1200R325-1 Injection pump : 0 460 426 195 Type number

Customer Part-No. :

Customer-specific information Customer : NISSAN-MISA

Engine

: B 6.60 T

Power

KW: 100

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 343

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 020 assembly

Openina :

bar: 172.00...175.00 Pressure

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: --(from BDC): -

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 900 Speed Charge press. hPa: 1000 Setting value mm: 2.60...3.00

Shutof?

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 900 Charge press hPa: 1000

Setting value bar: 6.30...6.90 Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

Speed 1/min: 800 Charge press. hPa: 1000 Det. quantity cm3/ 1000s.: 86.50...87.50

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 5.0 1000S.: (5.0)

Full-load del. w/out charge press.:

1/min: 500 Speed

Del. quantity cm3/ 1000s.: 78.50...79.50

Shutoff

electromagnet Volt: 12

Low-idle speed regulation

1/min: 350 Speed

Del. quantity cm3/

1000s.: 21.00...25.00

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 5.0 1000s.: (5.0)

Full-load speed regulation

1/min: 1325 Speed Charge press hPa: 1000

Del. quantity cm3/ 1000s.: 51.00...57.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 105.00...155.00

1000s.: 105.0

Shutoff

electromagnet Volt: 12

Inspection pump test specifications Test specifications in parentheses

M10

Delivery-quant. and breakaway char.: Timing-device characteristic: 1st speed 1/min: 900 1/min: 800\* 1nd speed Charge press hPa: 1000 Charge-air pressure-setting mm: 6.30...6.90 mm: (6.10...7.10) TD travel hPa: 375 mm: 5.0 LDA-stroke electromagnet Volt: 12
2nd speed 1/min: 1200
Charge press hPa: 1000
TD travel mm: 3.70...4.50
mm: (3.40...4.80) Shutoff electromagnet Volt: 12
Del. quantity cm3/: 82.00...83.00
1000S.: (78.50...86.50)
3rd speed 1/min: 1400
Charge press. hPa: 1000
Shutoff Shutoff electromagnet Volt: 12 3rd speed 1/min: 700 Charge press hPa: 1000 electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 1325
Charge press. hPa: 1000
Shutoff mm: 1.00...1.80 mm: (0.70...2.10) TD travel Shutoff electromagnet Volt: 12 electromagnet Volt: 12
Del. quantity cm3/: 51.00...57.00
1000S.: (47.00...61.00)
9th speed 1/min: 1200 Supply-pump pressure characteristic: 1st speed 1/min: 1200 Charge press. hPa: 1000 Supply-pump Charge press. hPa: 1000 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 76.50...79.50
1000S.: (74.50...81.50)
12th speed 1/min: 800
Charge press. hPa: 1000
Shutoff bar: 7.70...8.30 bar: (7.50...8.50) pressure Shutoff electromagnet Volt: 12 2nd speed 1/min: 900 Charge press. hPa: 1000 Supply-pump electromagnet Volt: 12 Del. quyntity cm3/: 86.50...87.50 1000S.: (84.00...90.00) pressure bar: 6.30...6.90 bar: (6.10...7.10) 1/min: 500 Shutoff 18th speed electromagnet Volt: 12 3rd speed 1/min: 500 Charge press. hPa: 1000 Supply-pump Charge press. hPa: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 78.50...79.50 1000s.: (76.00...82.00) pressure bar: 4.40...5.00 bar: (4.20...5.20) Shutoff Mech. shutoff: electromagnet Volt: 12 Mech. Abstellung: 1st speed 1/min: 1200 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000S:: (0.00...3.00) Overlow quantity at overflow valve: 1/min: 500 1st speed Charge press. hPa: 1000 Shutoff Shutoff overtlow : 75.00...119.00 quantity cm3/10s: (75.00...119.00) 2nd speed 1/min: 1200 Charge press. hPa: 1000 Shutoff electroelectromagnet volt: 12 Electr. shutoff: 1/min: 350 1st speed Charge press. hPa: electromagnet Volt: 12 Overflow : 97.00...180.00 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) cm3/10s: (97.00...180.00) quantity Shutoff electromagnet volt: -

Idle delivery:

1st speed 1/min: 350

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 21.00...25.00 1000S.: (18.00...28.00) Dispersion cm3/: 5.0

1000s.: (5.0) 1/min: 450

4th speed Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00)

Automatic starting fuel delivery:

1/min: 200 1st speed

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 120.00...160.00

1000s.: (115.00...165.00)

2nd speed 1/min: 300

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 45.00...75.00 1000s.: (45.00...75.00)

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12

Del. quantity cm3/: 105.00...155.00

1000s.: (105.00...155.00)

Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3.6...3.8

KF mm: KOT

mm: 1.1...1.5

LDA stroke mm: 5.0

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Overflow restriction 0.75 mm - Part No. ..343,..344

Note inst. in remarks column

Test scheet : PEU 1.9 K8 Edition : 31.01.92

replaces

Calibrating oil : ISO-4113

: VE4/8F2300R425 Injection pump : 0 460 484 047 Type number

Customer Part-No. :

Customer-specific information

Customer : PSA

Engine : XUD9A

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil return temp.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery

Indicator setting

Piston stroke mm: 0.3 Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.40...3.80

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250

Setting value bar: 6.20...6.80

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250

Del. quantity cm3/ 1000s.: 27.90...28.90

Shutoff

electromagnet Volt: 12 cm3/: 2.0 Dispersion 1000s.: (3.0)

Residual-Delivery Setting

1/min: 500 Speed

Del. quantity cm3/

1000s.: 2.00...3.00

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2650 Speed

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 35.00...61.00

1000s.: 35.00 mind

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1250 Charge press hPa: 12

Inj.—qty. cm3/ difference 1000S.: 2.00...8.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel

mm: 1.90...2.30 difference

Shutoff

electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP) 1. Speed 1/min: 1250

Supply pump pressure Delivery-quant. and breakaway char.: difference bar: 0.90...1.30 Shutoff 1/min: 2900 electromagnet Volt: 12 2nd speed Shutoff electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2650 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: Shutoff 1/min: 2000 mm: 7.50...8.30 mm: (7.20...8.60) electromagnet Volt: 12 Cel. quantity cm3/: 10.00...14.00 2nd speed TD travel 1000s.: (8.00...16.00) 1/min: 2500 Shutoff 8th speed electromagnet Volt: 12 Shutoff 1/min: 1250 mm: 3.40...3.80 mm: (3.10...4.10) 3rd speed TD travel Shutoff electromagnet Volt: 12 4th speed 1/min: 800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 31.10...32.10 1000s.: (29.90...34.30) 4th speed mm: 1.00...1.80 TD travel mm: (0.70...2.10) Shutoff 1/min: 1250 12th speed electromagnet Volt: 12 Shutoff electromagnet Volt: 12
Del. quyntity cm3/: 27.90...28.90
10005.: (26.20...30,60) Supply-pump pressure characteristic: 1/min: 500 1/min: 500 1st speed 20th speed Shutoff Supply-pump bar: 4.40...5.00 electromagnet Volt: 12 Del. quantity cm3/: 27.80...30.80 1000s.: (26.30...32.30) pressure bar: (4.20...5.20) Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Mech. shutoff: Supply-pump Mech. Abstellung: bar: 6.20...6.80 pressure bar: (6.00...7.00) 1st speed 1/min: 2200 Del. quantity cm3/: 0.00...3.00 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2200 1000s.: (0.00...3.00) Shutoff Supply-pump electromagnet volt: 12 bar: 8.50...9.10 pressure bar: (8.30...9.30) Electr. shutoff: Shutoff electromagnet Volt: 12 1st speed 1/min: 375 Del. quantity cm3/: 0.00...3.00 Overlow quantity at overflow valve: 1000s.: (0.00...3.00) Shutoff 1/min: 500 1st speed electromagnet volt: -Shutoff electromagnet Volt: 12 Damper set qty.: : 41.70...83.40 Overflow ' cm3/10s: (27.80...97.30) 1/min: 2200 LFG-setting: quantity 2nd speed solidale con carcassa: Shutoff Idle delivery: electromagnet Volt: 12 : 55.60...138.90 Overflow ? 1st speed 1/min: 375 quantity cm3/10s: (41.70...152.90) Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 7.00...9.00 1000s.: (4.00...12.00) High Idle: 1/mi: 475 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.00...9.00 1000S.: (4.00...12.00) Residual: 1/min: 500 1.Rotacao Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.00...3.00 1000s.: (0.50...4.50) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1st speed 1/min: 1250 Inj.-qty. cm3/ : 2.00...8.00 difference 1000s.: (2.00...8.00) Shuroff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 : 1.90...2.30 TD-travel mm: (1.40...2.80) difference Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1250 Supply pump-: 0.90...1.30 pressure bar: (0.70...1.50) difference Shuto? r elect omagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 225 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 37.00...71.00 1000s.: (37.00...71.00) 1/min: 350 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 20.00...40.00 1000s.: (20.00...40.00)

4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...61.00 10005.: (35.00...61.00) Shutoff electromagnet: Cut-in : 10.0 min voltage Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.6...3.8 KF mm: KOT MS mm: 1.2...1.6 mm: 17.0...19.0 XK mm: 12.0...15.4 XL

Remarks:

Overflow restriction 0.55 mm - Part No. ..303

Note inst. in remarks column

: PEU 1.9 K11 Test scheet Edition : 31.01.92

replaces

: ISO-4113 Calibrating oil

: VE4/8F2300R425-1 Injection pump : 0 460 484 054 Type number

Customer Part-No. :

Customer-specific information

Customer

: XUD9AL - D70/N2/N3 Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temo.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery

Indicator setting Piston stroke mm: 0.3

Outlet : A

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.50...3.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

Speed 1/min: 1250 Setting value bar: 5.70...6.30

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250

Del. quantity cm3/ 1000s.: 30.00...31.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0 1000s.: (3.9)

Residual-Delivery Setting

Speed 1/min: 500

Del. quantity cm3/

1000s.: 2.50...3.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2650 Speed

Del. quantity cm3/

1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100 Speed

Del. quantity cm3/: 42.00...68.00

1000s.: 42.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed hPa: 12 Charge press

Inj.-qty. cm3/

difference 1000s.: 2.00...8.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo injezione (SV)

1.Speed 1/min: 1250

TD-travel

difference mm: 2.00...3.00

Shutoff

electromagnet Volt: 12 SP press.-dif.measurement pompa di mandata (FP)

1.Speed 1/min: 1250

Supply pump pressure Delivery-quant. and breakaway char.: bar: 1.20...1.80 difference Shutoff electromagnet Volt: 12 2nd speed 1/min: 2900 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S:: (0.00...6.00)
5th speed 1/min: 2650 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: Shutoff electromagnet Volt: 12
Del. quantity cm3/: 9.00...13.00
1000s.: (7.00...15.00)
8th speed 1/min: 2500 2nd speed 1/min: 2000 TD travel mm: 6.70...7.50 mm: (6.40...7.80) Shutoff electromagnet Volt: 12 Shutoff 1/min: 1250 mm: 3.50...3.90 3rd speed TD travel mm: (3.00...4.40) Shutoff electromagnet Volt: 12 4th speed 1/min: 800 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 32.50...34.50 1000s.: (31.30...35.70) mm: 1.20...2.00 mm: (0.90...2.30) TD travel Shutoff 1/min: 1250 12th speed electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 30.00...31.00 1000s.: (28.30...32.70) 20th speed 1/min: 500 Supply-pump pressure characteristic: 1/min: 500 1st speed Shutoff Supply-pump bar: 3.30...3.90 bar: (3.10...4.10) electromagnet Vclt: 12 Del. quantity cm3/: 30.00...33.00 1000s.: (28.50...34.50) pressure Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Mech. shutoff: Supply-pump Mech. Abstellung: bar: 5.70...6.30 pressure bar: (5.50...6.50) Shutoff electromagnet Volt: 12 3rd speed 1/min: 2200 1000s.: (0.00...3.00) Shutoff Supply-pump electromagnet volt: 12 pressure bar: 8.20...8.80 bar: (8.00...9.00) Electr. shutoff: Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: Shutoff 1/min: 500 1st speed electromagnet volt: -Shutoff electromagnet Volt: 12 Damper set qty.: Overflow : 41.70...83.40 cm3/10s: (27.80...97.30) quantity LFG-setting: 2nd speed 1/min: 2200 solidale con carcassa: Shutoff Idle delivery: electromagnet Volt: 12 : 55.60...138.90 Overflow 1st speed 1/min: 375 quantity cm3/10s: (41.70...152.90) Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 6.50...8.50 1000s.: (3.50...11.50) High Idle: 1/mi: 475 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.50...10.50 1000s.: (5.50...13.50) Residual: 1/min: 500 1.Rotacao Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.50...3.50 1000s.: (1.00...5.00) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1st speed 1/min: 1250 Inj.-qty. cm3/ : 2.00...8.00 difference 1000s.: (2.00...8.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 TD-travel : 2.00...3.00 difference mm: (1.90...3.10) Shutoff electromagnet Volt: 12 SP press.—dif.measurement: pompa di mandata (FP): 1/min: 1250 1st speed Supply pump-: 1.20...1.80 pressure difference bar: (1.10...1.90) Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 225 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 37.00...71.00 1000s.: (37.00...71.00) 1/min: 350 2nd speed Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 20.00...40.00

1000s.: (20.00...40.00)

1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 42.00...68.00 1000s.: (42.00...68.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.6...3.8 KF mm: KOT MS mm: 1.2...1.6 Remarks: : Overflow restriction 0.55 mm - Part No. ..303

Note inst. in remarks column

: PEU 1.9 K13 Test scheet : 31.01.92 Edition

replaces

Calibrating oil : ISO-4113

Injection cump : VE4/8F2300R425-2 : 0 460 484 055 Type number

Customer Part-No. :

Customer-specific information

Customer

: XUD9A-N2 - BVA Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Openina |

bar: 130.00...133.00 Pressure

Test inj. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 x Length mm: 450

Start of delivery

Indicator setting Piston stroke mm: 0.3

**Outlet** : A

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.40...3.80

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 6.20...6.80

Shutof?

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del. quantity cm3/ 1000s.: 30.00...31.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0 1000s.: (3.0)

Residual-Delivery Setting

1/min: 500 Speed

Del. quantity cm3/

1000s.: 2.50...3.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2650 Speed

Del. quantity cm3/ 1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 42.00...68.00

mind 1000s.: 42.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Ini.-aty.dif.measurement:

1/min: 1250 Speed Charge press hPa: 12

Inj.—qty. cm3/ difference 1000S.: 2.00...8.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel

mm: 1.50...2.70 difference

Shutoff

electromagnet Volt: 12 SP press.-dif.measurement

pompa di mandata (FP) 1. Speed 1/min: 1250

M19

Supply pump pressure Delivery-quant. and breakaway char.: difference bar: 0.80...1.40 Shutoff electromagnet Volt: 12 2nd speed 1/min: 2900 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000s.: (0.00...6.00)
5th speed 1/min: 2650 Inspection-pump test specifications Test specifications in parentheses Timing device characteristic: 5th speed Shutoff 1/min: 2000 mm: 7.50...8.30 mm: (7.20...8.60) 2nd speed TD travel 8th speed Shutoff Shutoff electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.40...3.80
mm: (2.90...4.30) Shutoff electromagnet Volt: 12 Shutoff 1/min: 800 4th speed mm: 1.00...1.80 mm: (0.70...2.10) TD travel Shutoff electromagnet Volt: 12 Shutoff Supply-pump pressure characteristic: 1st speed 1/min: 500 Supply-pump Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...33.00 1000s.: (28.50...34.50) pressure bar: 4.40...5.00 bar: (4.20...5.20) Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Mech. shutoff: Supply-pump Mech. Abstellung: bar: 6.20...6.80 pressure bar: (6.00...7.00) 1/min: 2200 1st speed Shutoff Del. quantity cm3/: 0.00...3.00 electromagnet Volt: 12 3rd speed 1/min: 2200 1000s.: (0.00...3.00) Shutoff Supply-pump electromagnet volt: 12 bar: 8.50...9.10 bar: (8.30...9.30) pressure Electr. shutoff: Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: 1000s.: (0.00...3.00) Shutoff 1st speed 1/min: 500 electromagnet volt: -Shutoff electromagnet Volt: 12 Damper set qty.: : 41.70...83.40 Overflow cm3/10s: (27.80...97.30) 1/min: 2200 quantity LFG-setting: 2nd speed solidale con carcassa: Idle delivery: Shutoff electromagnet Volt: 12 : 55.60...138.90 Overflow 1/min: 375 1st speed quantity cm3/10s: (41.70...152.90) Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 6.50...8.50 1000S.: (3.50...11.50) High Idle: 1/mi: 475 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.50...10.50 1000S:: (5.50...13.50) Residual: 1/min: 500 1.Rotacao Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.50...3.50 1000s.: (1.00...5.00) Load-dependent start of delivery: Inj.-dty.dif.measurement: 1st speed 1/min: 1250 Inj.-qty. cm3/ : 2.00...8.00 difference 1000S.: (2.00...8.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 TD-travel : 1.60...2.60 mm: (1.50...2.70) difference Shutoff electromagnet Volt: 12 SP press.—dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1250 Supply pump-: 0.80...1.40 pressure difference bar: (0.70...1.50) Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 225 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 37.00...71.00 1000s.: (37.00...71.00)

1/min: 350 electromagnet Volt: 12 Del. quantity cm3/: 20.00...40.00

1000s.: (20.00...40.00)

4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 42.00...68.00 1000s.: (42.00...68.00) Shutoff electromagnet: Cut-in min voltage : 10.0 Rared voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.6...3.8 K KF mm: KOT MS mm: 1.2...1.6 Remarks: Overflow restriction 0.55 mm - Part No. ..303

2nd speed

Shutoff

Note inst. in remarks column

: PEU 1.9 K12 Fest scheet : 31.01.92 Edition

replaces

Calibrating oil : ISO-4113

injection pump : VE4/8F23C0R425~3 : 0 460 484 057 Type number

Customer Part-No. :

Customer-specific information

Customer

: XUD9AL - BVA Engine

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil °C return temp.

with thermometer : 40.00...43.00 Electronically : 42.00...50.00

Inlet press., bar : 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

bar: 130.00...133.00 Pressure

Test ini. tubing : 1 680 750 073

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 450 x Length

Start of delivery

Indicator setting

mm: 0.3 Piston stroke **Outlet** : A

Injection pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.10...3.50

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 6.20...6.80

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250

Del. quantity cm3/ 1000s.: 30.00...31.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0

1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 500

Del. quantity cm3/

1**000s**.: 2.50...3.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2650 Speed

Del. quantity cm3/

1000s.: 9.00...13.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 42.00...68.00

1000s.: 42.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed hPa: 12 Charge press

Inj.—qty. cm3/ difference 1000S.: 2.00...8.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel

difference mm: 2.40...3.40

Shutoff

electromagnet Volt: 12 SP press.—dif.measurement pompa di mandata (FP)

1.Speed 1/min: 1250 Supply pump pressure difference Delivery-quant. and breakaway char .: bar: 1.70...2.30 Shutoff electromagnet Volt: 12 2nd speed 1/min: 2900 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S:: (0.00...6.00)
5th speed 1/min: 2650 Inspection pump test specifications Test specifications in parentheses Timing-device characteristic: 5th speed Shutoff 2nd speed 1/min: 2000 mm: 6.40...7.20 mm: (6.10...7.50) TD travel Shutoff Shutoff electromagnet Volt: 12 1/min: 1250 3rd speed TD travel mm: 3.10...3.50 mm: (2.60...4.00) 9th speed Shutoff Shutoff electromagnet Volt: 12 4th speed 1/min: 800 electromagnet Volt: 12 Del. quantity cm3/: 32.50...34.50 1000s.: (31.30...35.70) mm: 0.60...1.40 mm: (0.30...1.70) TD travel Shutoff 1/min: 1250 12th speed electromagnet Volt: 12 Shutoff Supply-pump pressure characteristic: 1/min: 500 1st speed Supply-pump pressure Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...33.00 1000s.: (28.50...34.50) bar: 4.40...5.00 bar: (4.20...5.20) Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 2nd speed Mech. shutoff: Supply-pump Mech. Abstellung: bar: 6.20...6.80 bar: (6.00...7.00) pressure Shutoff electromagnet Volt: 12 3rd speed 1/min: 2200 1000s.: (0.00...3.00) Shutoff Supply-pump electromagnet volt: 12 bar: 8.50...9.10 bar: (8.30...9.30) pressure Electr. shutoff: Shutoff electromagnet Volt: 12 Overlow quantity at overflow valve: Shutoff 1st speed 1/min: 500 electromagnet volt: -Shutoff electromagnet Volt: 12 Damper set qty.: : 41.70...83.40 Overflow cm3/10s: (27.80...97.30) quantity LFG-setting: 2nd speed solidale con carcassa: Idle delivery: 1/min: 2200 Shutoff electromagnet Volt: 12 : 55.60...138.90 cm3/10s: (41.70...152.90) 1st speed Shutoff Overflow 1/min: 375 quantity

electromagnet Volt: 12 Del. quantity cm3/: 6.50...8.50 1000S.: (3.50...11.50) High Idle: 1/mi: 475 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 8.50...10.50 1000s.: (5.50...13.50) Residual: 1/min: 500 1.Rotacao Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2.50...3.50 1000s.: (1.00...5.00) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1st speed 1/min: 1250 Inj.—qty. cm3/ : 2.00...8.00 difference 1000s.: (2.00...8.00) Shutof F electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 TD-travel : 2.40...3.40 mm: (2.30...3.50)difference Shutoff electromagnet Volt: 12 SP press.—dif.measurement: pompa di mandata (FP): 1st speed 1/min: 1250 Supply pump-: 1.70...2.30 pressure difference bar: (1.60...2.40) Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1/min: 225 1st speed Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 37.00...71.00 1000s.: (37.00...71.00) 1/min: 350 2nd speed Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 20.00...40.00

1000s.: (20.00...40.00)

1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 42.00...68.00 1000s.: (42.00...68.00) Shutoff electromagnet: Cut-in min voltage : 10.0 : 12.0 Rated voltage Mounting and assembly dimensions: Designation mm: 3.6...3.8 KF mm: KOT MS mm: 1.2...1.6 Remarks: Overflow restriction 0.55 mm - Part No. . . 303

Note inst. in remarks column

Test scheet : WW 2.4 S7 Edition : 03.02.92 : 18.02.91 replaces Calibrating oil : ISO-4113

Injection pump : VE5/EF2100L398 : 0 460 485 003 Type number

Customer Part-No. :

Customer-specific information

Customer

Engine

: 153-2.4L.-T4

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer: 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery Prestroke mm: -(from BDC): -

Injection-pump setting values Test specifications in parentheses

Timing device travel

1/min: 1250 Speed

Setting value mm: 1.50...1.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 5.70...6.30

Shutoff

electromagnet Volt: 12

Full-load del. with charge press.:

1/min: 1250

Del. quantity cm3/ 1000s.: 36.00...37.00

Shutoff

electromagnet Volt: 12 Dispersion cm3/: 2.0

Low-idle speed regulation

Speed 1/min: 415

Del. quantity cm3/

1000s.: 7.00...9.00

Shutoff

electromagnet Volt: 12

Residual-Delivery Setting

1/min: 540 Speed

Del. quantity cm3/

1000s.: 6.50...7.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2400

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 35.00...85.00 mind 1000s.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

Speed 1/min: 1500

Inj.-qty. cm3/

difference 1000s.: 3.50...9.50

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1500 1.Speed

TD-travel

difference mm: 0.30...0.50

Shutoff Del. quantity cm3/: 0.00...6.00 1000\$:: (0.00...6.00) electromagnet Volt: 12 1/min: 2400 5th speed Inspection-pump test specifications Test specifications in parentheses Shutoff electromagnet Volt: 12
Del. quantity cm3/: 10.00...14.00
1000s.: (8.00...16.00)
8th speed 1/min: 2300 Timing-device characteristic: 8th speed Shutoff 1st speed 1/min: 2100
TD travel mm: 5.30...6.10
mm: (5.00...6.40)
electromagnet Volt: 12
2nd speed 1/min: 1790
TD travel mm: 4.60...5.40
mm: (4.30...5.70) electromagnet Volt: 12
Del. quantity cm3/: 17.00...27.00
1000s.: (16.00...28.00)
9th speed 1/min: 2100 Shutoff Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 mm: 1.50...1.90 mm: (1.00...2.40) TD travel Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 36.00...37.00 1000\$:: (34.30...38.70) Shutoff electromagnet Volt: 12 20th speed Shutoff 1/min: 600 Supply-pump pressure characteristic: electromagnet Volt: 12 Del. quantity cm3/: 32.30...35.30 1000s.: (30.80...36.80) 1st speed 1/min: 600 Supply pump pressure bar: 3.80...4.40 Shutoff Mech. shutoff: electromagnet Volt: 12 2nd speed 1/min: 1250 Electr. shutoff: Supply-pump 1st speed 1/min: 415
Del. quantity cm3/: 0.00...3.00
1000s.: (0.00...3.00) pressure bar: 5.70...6.30 Shutoff electromagnet Volt: 12 3rd speed 1/min: 2100 Shutoff Supply-pump electromagnet volt: pressure bar: 8.10...8.70 Shutoff Damper set qty.: electromagnet Volt: 12 LFG-setting: solidale con carcassa: Idle delivery: Overlow quantity at overflow valve: 1st speed Shutoff 1/min: 600 1st speed 1/min: 415 electromagnet Volt: 12 Shutoff : 41.70...83.40 cm3/10s: (27.80...97.30) 1/min: 2100 electromagnet Volt: 12 Del. quantity cm3/: 7.00...9.00 10005:: (4.00...12.00) Overflow quantity 2nd speed Shutoff electromagnet Volt: 12 Overflow : 55.60...138.90 Residual: cm3/10s: (41.70...152.90) quantity 1.Rotacao 1/min: 540 Shutoff Delivery-quant. and breakaway char.: 3rd speed 1/min: 2600 2nd speed Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12

Del. quantity cm3/: 6.80...8.80 1000s.: (5.30...10.30) Load-dependent start of delivery: Inj.-cty.dif.measurement: 3rd speed 1/min: 1500 Inj.-qty. cm3/: 3.50...9.50 \* difference 1000S.: (2.50...10.50) Shutoff electromagnet Volt: 12 5th speed 1/min: 1500 Ini.-qty. cm3/: 0.00...3.00 # difference 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1/min: 1500 1st speed : 0.30...0.50 \* TD-travel mm: (0.30...0.50) difference Shutoff electromagnet Volt: 12 3rd speed 1/min: 1500 : 0.90...1.30 # TD-travel mm: (0.50...1.70) difference Shutoff electromagnet Volt: 12 SP press.—dif.measurement: pempa di mandata (FP): 1/min: 1 1/min: 1500 1st speed 3rd speed Supply pump-: 0.80...1.20 # pressure bar: (0.60...1.40) difference Shutoff electromagnet Voit: 12 Automatic starting fuel delivery: 1/min: 180 1st speed Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00) 1/min: 380 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 17.00...37.00 1000s.: (17.00...37.00) 1/min: 100 4th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00) Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

mm: 3.2...3.4 num: K-OT mm: 1.2...1.6 mm: 2.4 K۶ MS SVS max.

Remarks:

On initial measurement, screw in residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.

Overflow restriction 0.55 mm - Part No. ...303

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : VWW 1.6 X20 Edition : 04.02.92 replaces Calibrating oil : ISO-4113 Injection pump : VE4/9F2250R293-5 : 0 460 494 274 Type number Customer Part-No. : Customer-specific information Customer Engine : 086T - 1.6 LLK TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating-oil return temo. with thermometer: 40.00...48.00 : 42.00...50.00 Electronically Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder assembly : 1 688 901 000 Opening | bar: 147.00...150.00 Pressure Test inj. tubing : 1 680 750 017 Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length Start of delivery Prestroke mm: -(from BDC): -Injection pump setting values Test specifications in parentheses Timing device travel

1/min: 1250 Charge press. hPa: 750 Setting value mm: 3.00...3.40 Shutoff electromagnet Volt: 12 Supply-pump pressure M28

Speed 1/min: 1250 Charge press hPa: 750 Setting value bar: 4.90...5.50 Shutof? electromagnet Volt: 12 Full-load del. with charge press.: Speed 1/min: 1500 Charge press. hPa: 750 Del. quantity cm3/ 1000s.: 42.00...43.00 Shutoff electromagnet Volt: 12 cm3/: 2.5 Dispersion 1000s.: (3.0) Full-load del. w/out charge press.: Speed 1/min: 700 Del. quantity cm3/ 1000s.: 26.50...27.50 Shutoff electromagnet Volt: 12 Residual-Delivery Setting Speed 1/min: 615 Del. quantity cm3/ 1000s.: 4.00...5.00 Shutoff electromagnet Volt: 12 Full-load speed regulation Speed 1/min: 2525 Charge press nPa: 750 Charge press Del. quantity cm3/ 1000s.: 13.00...17.00 Shutoff electromagnet Volt: 12 Start: 1/min: 100 Speed Del. quantity cm3/: 35.00...85.00 mind 1000s.: 35.00 mind

Shutoff electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

Speed 1/min: 1250 Charge press hPa: cm3/ Inj.-qty.

difference 1000s.: 8.50...12.50

Shutoff

electromagnet Volt: 12

TD-travel dif.measurement correttore anticipo iniezione (SV) 1.Speed 1/min: 1250 Shutoff electromagnet Volt: 12 Charge press hPa: -Overlow quantity at overflow valve: TD-travel difference mm: 0.60...0.80 1st speed Shutoff 1/min: 700 Shutoff electromagnet Volt: 12 Overflow: 41.70...33.40 electromagnet Volt: 12 quantity cm3/10s: (27.80...97.30)
2nd speed 1/min: 2250
Charge press. hPa: 750
Shutoff Inspection pump test specifications Test specifications in parentheses Timing-device characteristic: electromagnet Volt: 12 Overflow : 55.60...138.90 quantity cm3/10s: (41.70...152.90) 1/min: 2000 hPa: 750 2nd speed Charge press mm: 6.40...7.20 mm: (6.10...7.50) TD travel Delivery-quant. and breakaway char.: Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 Charge press hPa: 750 1nd speed 1/min: 900\* Charge-air pressure-setting mm: 3.00...3.40 mm: (2.50...3.90) TD travel hPa: 300 LDA-stroke mm: 5.5 Shutoff Shutoff electromagnet Volt: 12
4th speed 1/min: 1000
Charge press hPa: 750
TD travel mm: 1.70...2.50
mm: (1.40...2.80) electromagnet Volt: 12
Del. quantity cm3/: 33.00...34.00
1000S.: (30.50...36.50)
2nd speed 1/min: 2650
Charge press. hPa: 750
Shutoff Shutoff electromagnet Volt: 12
Del. quantity cm3/: 0.00...6.00
1000S.: (0.00...6.00)
5th speed 1/min: 2525
Charge press. hPa: 750
Shutoff electromagnet Volt: 12 5th speed 1/min: 2250 Charge press. hPa: 750 TD travel mm: 7.00...7.80 mm: (6.70...8.10) Shutoff electromagnet Volt: 12
Del. quantity cm3/: 13.00...17.00
1000S.: (11.00...19.00)
8th speed 1/min: 2425 electromagnet Volt: 12 Supply-pump pressure characteristic: Charge press. hPa: 750 Shutoff 1st speed 1/min: 700 Charge press. hPa: 750 electromagnet Volt: 12
Del. quantity cm3/: 26.50...36.50
1000S.: (25.50...37.50)
9th speed 1/min: 2250
Charge press. hPa: 750
Shutoff Supply-pump pressure bar: 3.30...3.90 bar: (3.10...4.10) Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Charge press. hPa: 750 electromagnet Volt: 12
Del. quantity cm3/: 35.50...37.50
1000S.: (34.30...38.70)
12th speed 1/min: 1500
Charge press. hPa: 750
Shutoff Supply-pump pressure bar: 4.90...5.50 bar: (4.70...5.70) Shutoff electromagnet Volt: 12 3rd speed 1/min: 2250 Charge press. hPa: 750 electromagnet Volt: 12 Del. quyntity cm3/: 42.00...43.00 1000s.: (40.30...44.70) Supply-pump bar: 7.70...8.30 bar: (7.50...8.50) pressure 13th speed 1/min: 500 Charge press. hPa: -

Shutoff Del. quantity cm3/: 12.00...14.00 1000s.: (8.00...18.00) electromagnet Volt: 12 Del. quantity cm3/: 26.00...31.00 1000\$.: (23.50...33.50) Residual: 1/min: 400 14th speed Charge press. hPa: -Shutoff 1/min: 615 1.Rotacao Shutoff 2nd speed Shutoff Charge press. hPa: -Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5.50...7.50 1000S.: (3.00...10.00) Load-dependent start of delivery: Inj.-qty.dif.measurement: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 34.00...37.00 1000s.: (32.50...38.50) 1st speed 1/min: 1250 Inj.-qty. cm3/ : 8.50...12.50\* difference 1000s.: (6.50...14.50) Shutoff Mech. shutoff: electromagnet Volt: 12 2nd speed 1/min: 1250 cm3/: 0.00...4.50# Electr. shutoff: Inj.-qty. difference 1000s.: (0.00...4.50) 1/min: 465 1st speed Shutoff Charge press. hPa: electromagnet Volt: 12 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 Shutoff electromagnet volt: -: 0.60...0.80\* mm: (0.60...0.80) TD-travel Idle delivery: difference Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Damper set qty.: TD-travel : 0.90...1.30 2nd speed 1/min: 1000 difference mm: (0.60...1.60)# Shutoff Shutoff electromagnet Volt: 12 Del. quantity cm3/: 11.00...13.00 1060s.: (8.00...16.00) electromagnet Volt: 12 SP press.—dif.measurement: pompa di mandata (FP): LFG-setting: 1st speed 1/min: 1250 solidale con carcassa: Supply pump-Idle delivery: pressure : 0.60...1.00# difference bar: (0.40...1.20) 1st speed 1/min: 465 Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 12.00...14.00 1000S.: (7.50...18.50) Automatic starting fuel delivery: 1/min: 200 1st speed High Idle: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00) 1st speed 1/mi: 515 Shutoff electromagnet Volt: 12

**NO2** 

4th speed 1/min: 100

Shutoff

electromagnet Volt: 12 Del. quantity cm3/: 35.00...85.00 1000s.: (35.00...85.00)

## Shutoff electromagnet:

Cut-in

min voltage : 10.0 Rated voltage : 12.0

## Mounting and assembly dimensions:

Designation

mm: -

mm: 5.6...6.0 KF mm: 1.2...1.6 mm: 5.5 MS LDA stroke

Remarks:

\* Correction at adjusting nut (46)

Operate control lever after each manifold-pressure compensator pressure change.

Overflow restriction 0.55 mm - Part No. ..303

On initial measurement, screw in residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm. BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column : PEU 2.1 F6 Test scheet Edition : 03.02.91 : 11.10.91 replaces Calibrating oil : ISO-4113 : VE4/9F2150R396-1 Injection pump : 0 460 494 275 Type number Customer Part-No. : Customer-specific information Customer : XUD 11 ATE-BVA : 42.00...50.00 : 1 688 901 022 bar: 130.00...133.00 mm: 450 mm: 0.3 (from BDC): +0.02(0.04)Test specifications in parentheses

Engine TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating-oil return temp. with thermometer : 40.00...48.00 Electronically Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder assembly Opening Pressure Test inj. tubing : 1 680 750 073 Outside diameter : 6.00 x Wall thickness : 2.00 x Length Start of delivery Prestroke Injection pump setting values Timing-device travel Speed 1/min: 1250 Charge press. hPa: 1000 Setting value mm: 3.80...4.20 Shutoff electromagnet Volt: 12 Supply-pump pressure

**NO**4

1/min: 1250 Speed Charge press hPa: 1000 Setting value bar: 5.70...6.30 Shutoff electromagnet Volt: 12 Full-load del. with charge press.: Speed 1/min: 1250 Charge press. hPa: 1000 Del. quantity cm3/ 1000s.: 61.00...62.00 Shutoff electromagnet Volt: 12 Dispersion cm3/: 2.0 1000s.: (3.0) Full-load del. w/out charge press.: 1/min: 700 Speed Del. quantity cm3/ 1000s.: 40.50...41.50 Shutoff electromagnet Volt: 12 Residual-Delivery Setting Speed 1/min: 475 Del. quantity cm3/ 1000S:: 3.50...4.50 Shutoff electromagnet Volt: 12 Full-load speed regulation 1/min: 2300 Charge press hPa: 1000 Del. quantity cm3/ 1000s.: 44.20...48.20 Shutoff electromagnet Volt: 12 Start: 1/min: 100 Speed Del. quantity cm3/: 43.00...73.00 mind 1000s.: 43.00 Shutoff electromagnet Volt: 12

Load-dependent start of delivery: Inj.-qty.dif.measurement:

1/min: 1250 Speed Charge press hPa: 12 cm3/Inj.-qty.

difference 1000S.: 15.00...19.00 Shutoff

electromagnet Volt: 12

TD-travel dif.measurement Shutoff electromagnet Volt: 12 Overflow : 41.70...83.40 correttore anticipo iniezione (SV)
1.Speed 1/min: 1250 : 41.70...83.40 quantity cm3/10s: (26.80...98.30) 2nd speed 1/min: 2000 Charge press. hPa: 1000 Shutoff TD-travel difference mm: 0.40...0.60 Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Overflow : 55.60...152.90 Inspection—pump test specifications Test specifications in parentheses quantity cm3/10s: (40.70...154.90) Timing device characteristic: Delivery-quant. and breakaway char.: 2nd speed 1/min: 2000 hPa: 1000 Charge press 1nd speed 1/min: 750 mm: 6.50...7.30 TD travel Charge-air pressure-setting hPa: 400 mm: 7.5 mm: (6.20...7.60) Shutoff LDA-stroke electromagnet Volt: 12
3rd speed 1/min: 1250
Charge press hPa: 1000
TD travel mm: 3.80...4.20
mm: (3.30...4.70) Shutoff Charge press. hPa: 1000 Shutoff Shutoff electromagnet Volt: 12 1/min: 750 4th speed electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1000S.: (0.00...6.00) 3rd speed 1/min: 2400 Charge press. hPa: 1000 Shutoff Charge press hPa: 1000 TD travel mm: 1.80...2.60 mm: (1.50...2.90) Shutoff electromagnet Volt: 12 electromagnet Volt: 12 bel. quantity cm3/: 36.00...42.00 1000s.: (33.00...45.00) Supply-pump pressure characteristic: charge press. hPa: 1000 Shutoff 1st speed 1/min: 700 Charge press. hPa: 1000 Supply-pump bar: 4.40...5.00 pressure electromagnet Volt: 12 Del. quantity cm3/: 44.20...48.20 bar: (4.20...5.20) 1000s.: (42.20...50.20) 1/min: 2000 Shutoff electromagnet Volt: 12 9th speed 2nd speed 1/min: 1250 Charge press. hPa: 1000 Supply-pump Charge press. hPa: 1000 Shutoff bar: 5.70...6.30 pressure bar: (5.50...6.50) Shutoff electromagnet Volt: 12 Charge press. hPa: 1000 Shutoff 1/min: 2000 3rd speed Charge press. hPa: 1000 electromagnet Volt: 12 Del. quyntity cm3/: 61.00...62.00 1000s.: (59.30...63.70) 18th speed 1/min: 700 Supply-pump pressure bar: 7.50...8.10 bar: (7.30...8.30) Charge press. hPa: -Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 40.50...41.50 1000s.: (38.00...44.00) Overlow quantity at overflow valve: 1st speed 1/min: 700 20th speed 1/min: 700 Charge press. hPa: 1000

Shutoff cm3/: 15.00...19.00 Ini.-aty. difference 1000S.: (12.00...22.00) electromagnet Volt: 12 Del. quantity cm3/: 62.50...65.50 1000s.: (61.00...67.00) 21th speed 1/min: 450 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 Charge press. hPa: -Shutoff TD-travel : 0.40...0.60 mm: (0.40...0.60) difference electromagnet Volt: 12 Del. quantity cm3/: 37.00...42.00 1000S.: (34.50...44.50) Shutoff electromagnet Volt: 12 4th speed 1/min: 1250 4th speed Supply pump-Mech. shutoff: pressure : 0.50...0.90 Mech. Abstelluna: difference bar: (0.30...1.10) Shutoff 1st speed 1/min: 2000 electromagnet Volt: 12 Charge press. hPa: 1000 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Automatic starting fuel delivery: Shutoff 1st speed 1/min: 200 Shutoff electromagnet volt: 12 electromagnet Volt: 12 Del. quantity cm3/: 40.00...80.00 Electr. shutoff: 1000s.: (40.00...80.00) 1st speed 1/min: 350 Charge press. hPa: -1/min: 325 2nd speed Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...53.00 1000S.: (30.00...53.00) Damper set gty.: LFG-setting: 1/min: 100 4th speed solidate con carcassa: Idle delivery: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 43.00...73.00 1000s.: (43.00...73.00) 1/min: 350 1st speed Shutoff electromagnet Volt: 12 Shutoff electromagnet: Del. quantity cm3/: 9.00...11.00 1000S.: (6.00...14.00) Cut-in min voltage : 10.0 High Idle: Rated voltage : 12.0 1st speed 1/mi: 450 Mounting and assembly dimensions: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 9.00...11.00 Designation mm: 3.6...3.8 1000s.: (6.00...14.00) KF mm: KOT mm: 0.7...1.1 MS Residual: Remarks: 1.Rotacao 1/min: 475 Shutoff \* Correction at adjusting nut (46) electromagnet Volt: 12 Del. quantity cm3/: 3.50...4.50 1000s.: (2.00...6.00) Operate control lever after each manifold-pressure compensator pressure Load-dependent start of delivery: Inj.-qty.dif.measurement: Overflow restriction 0.55 mm - Part No. 3rd speed 1/min: 1250 ..303

N06

Note inst. in remarks column

Test scheet : VWW 1.9 C5 Edition : 03.02.92 replaces : 10.12.91 Calibrating oil : ISO-4113

Injection pump : VE4/9F2200R420 Type number : 0 460 494 277 Customer Part-No. :

Customer-specific information

Customer

: 028.D - 1.9L. Engine

Power KW: 55

TEST BENCH REQUIREMENTS

Overflow restricti: 1 463 456 303

Calibrating oil °C return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Openina |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.30 mm: 840 x Lenath

Start of delivery

Indicator setting Piston stroke mm: 1.0 Outlet.

Injection-pump setting values Test specifications in parentheses

Timing device travel

Speed 1/min: 1250 Setting value mm: 3.50...3.90 Shutoff electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 5.50...6.10

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del. quantity cm3/

1000s.: 42.00...43.00

Shutoff

electromagnet Volt: 12 cm3/: 2.5 Dispersion 1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575 Del. quantity cm3/

1000s.: 5.50...5.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2525

Del. quantity cm3/

1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100 Del. quantity cm3/: 35.00...65.00 mind 1000s.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed Charge press hPa: 12

Inj.—qty. cm3/ difference 1000S:: 4.00...10.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1. Speed

TD-travel

difference mm: 0.60...0.80

Shutoff

electromagnet Volt: 12

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 0.00...6.00 1000S.: (0.00...6.00) Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1/min: 2525 5th speed Shutoff 1/min: 2000 mm: 6.50...7.30 mm: (6.20...7.60) electromagnet Volt: 12
Del. quantity cm3/: 10.00...14.00
1000s.: (8.00...16.00)
8th speed 1/min: 2425 2nd speed TD travel Shutoff electromagnet Volt: 12
3rd speed 1/min: 1250
TD travel mm: 3.50...3.90
mm: (3.00...4.40) Shutoff electromagnet Volt: 12
Del. quantity cm3/: 19.00...29.00
1000s.: (18.00...30.00)
9th speed 1/min: 2200 Shutoff electromagnet Volt: 12 4th speed 1/min: 750 Shutoff electromagnet Volt: 12
Del. quantity cm3/: 36.70...38.70
1000s.: (35.50...39.90)
12th speed 1/mir: 1250 mm: 1.40...2.20 TD travel mm: (1.10...2.50) Shutoff electromagnet Volt: 12 Shutoff electromagnet Volt: 12 Del. quyntity cm3/: 42.00...43.00 1000s.: (40.30...44.70) Supply-pump pressure characteristic: 1/min: 750 1/min: 750 1st speed 15th speed Shutoff Supply-pump bar: 4.30...4.90 bar: (4.10...5.10) electromagnet Volt: 12 Del. quantity cm3/: 33.70...36.70 1000s.: (32.20...38.20) pressure Shutoff electromagnet Volt: 12 2nd speed 1/min: 1250 1/min: 400 20th speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.50...41.50 1000s.: (33.00...44.00) Supply-pump bar: 5.50...6.10 bar: (5.30...6.30) pressure Shutoff electromagnet Volt: 12 3rd speed 1/min: 2200 Mech. shutoff: 3rd speed Supply-pump Electr. shutoff: bar: 7.70...8.30 pressure bar: (7.50...8.50) 1st speed 1/min: 450 Del. quantity cm3/: 0.00...3.00 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 12 Shutoff Overlow quantity at overflow valve: electromagnet volt: -1st speed Shutoff 1/min: 400 Damper set qty.: electromagnet Volt: 12 LFG-setting: : 41.70...83.40 solidale con carcassa: Idle delivery: Overflow cm3/10s: (27.80...97.30) 1/min: 2200 quantity 2nd speed Shutoff 1/min: 450 1st speed electromagnet Volt: 12 Shutoff : 55.60...138.90 electromagnet Volt: 12 Del. quantity cm3/: 9.00...11.00 1000S.: (6.00...14.00) Overflow cm3/10s: (41.70...152.90) quantity Delivery-quant. and breakaway char.: High Idle: 1/min: 2750 2nd speed 1st speed 1/mi: 525

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 9.00...11.00 1000S.: (6.00...14.00) Residual: 1/min: 575 1.Rotacao Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5.50...6.50 1000s.: (4.00...8.00) 2nd speed 1/min: 525 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.30...9.30 1000s.: (5.80...10.80) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1250 1st speed Inj.-qty. cm3/ : 4.00...10.00# difference 1000S: (3.00...11.00) electromagnet Volt: 12 5th speed 1/min: 1250 Inj.-qty. cm3/: 0.00...3.00\* Inj.-qty. cm3/: 0.00...3.00\* difference 1000S:: (0.00...3.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 TD-travel : 0.60...0.80# difference mm: (0.60...0.80) Shutoff electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.80...2.20\* difference mm: (1.50...2.50)SP press.—dif.measurement: pompa di mandata (FP): 1/min: -1st speed 1/min: 1250 3rd speed Supply pump-: 1.10...1.50\* pressure bar: (0.90...1.70) difference Shutoff electromagnet Volt: 12 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) gaz d'échappement-ARF) 1st speed 1/min: 1000

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 27.00...29.00 1000s.: (25.00...31.00) Automatic starting fuel delivery: 1st speed 1/min: 180 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...75.00 1000s.: (35.00...75.00) 1/min: 380 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...50.00 1000s.: (30.00...50.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...65.00 1000s.: (35.00...65.00) Shutoff electromagnet: Cut-in : 10.0 min voltage Rated voltage : 12.0 Mounting and assembly dimensions: Designation mm: 3.2...3.4 mm: 5.1...5.5 mm: 1.1...1.5 K KF MS Remarks: Overflow restriction 0.55 mm - Part No. On initial measurement, screw in residual-quantity adjusting screw 2 mm. Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.

Note inst. in remarks column

Test scheet : VWW 1.9 L Edition : 07.02.92

replaces

: ISO-4113 Calibrating oil

Injection pump : VE4/9F2300R432 Type number : 0 460 494 284

Customer Part-No. :

Customer-specific information

Customer

Engine : 1.9L, UATL - B3

TEST BENCH REQUIREMENTS

Calibrating-oil return temo.

with thermometer : 40.00...48.00 : 42.00...50.00 Electronically

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.0G x Wall thickness : 2.00 x Length mm: 840

Start of delivery

Indicator setting Piston stroke mm: 1.0

Outlet : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250 Speed

Setting value mm: 3.70...4.10

Shutoff

electromagnet Voit: 12

Supply-pump pressure

Speed 1/min: 1250 Setting value bar: 5.50...6.10

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

Speed 1/min: 1250

Del. quantity cm3/ 1000s.: 42.00...43.00

Shutoff

electromagnet Volt: 12 cm3/: 2.5 Dispersion 1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575

Del. quaritity cm3/ 1000s.: 5.50...6.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

Speed 1/min: 2600

Del. quantity cm3/ 1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

1/min: 100

Del. quantity cm3/: 35.00...65.00 mind 1000S.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Ini.-qty.dif.measurement:

Speed 1/min: 1250 Charge press hPa: 12

cm3/ Inj. qty.

difference 1000s.: 4.00...10.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV)

1/min: 1250 1.Speed

TD-travel

mm: 0.60...0.80difference

Shutoff

electromagnet Volt: 12

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:	Shutoff
1st speed 1/min: 2000 TD travet mm: 6.607.40	electromagnet Volt: 12 Del. quantity cm3/: 10.0014.00 1000s.: (8.0016.00)
mm: (6.307.70) + electromagnet Volt: 12 + 2nd speed 1/min: 1250 +	8th speed 1/min: 2500 Shutoff electromagnet Volt: 12
TD travel mm: 3.704.10 + (3.204.60)	Del. quantity cm3/: 21.5031.50 1000s.: (20.5032.50)
Shutoff electromagnet Volt: 12 3rd speed 1/min: 750	9th speed 1/min: 2200 Shutoff electromagnet Volt: 12
TD travel mm: 1.602.40 + mm: (1.302.70)	Del. quantity cm3/: 36.7038.70 1000s.: (35.5039.90)
Shutoff electromagnet Volt: 12	12th speed 1/min: 1250 Shutoff electromagnet Volt: 12
Supply-pump pressure characteristic:	Del. quyntity cm3/: 42.0043.00 1000s.: (40.3044.70)
1st speed 1/min: 750 Supply-pump pressure bar: 4.304.90	15th speed 1/min: 750 Shutoff
bar: (4.105.10)	electromagnet Volt: 12 Del. quantity cm3/: 33.7036.70 1000s.: (32.2038.20)
electromagnet Volt: 12 2nd speed 1/min: 1250	20th speed 1/min: 400 Shutoff
Supply-pump pressure bar: 5.506.10 bar: (5.306.30)	electromagnet Volt: 12 Del. quantity cm3/: 35.5041.50 1000s.: (33.0044.00)
Shutoff electromagnet Volt: 12 3rd speed 1/min: 2200	Mech. shutoff:
Supply-pump pressure bar: 7.708.30	Electr. shutoff:
bar: (7.508.50) Shutoff electromagnet Volt: 12	1st speed
Overlow quantity at overflow valve:	Shutoff electromagnet volt: -
1st speed 1/min: 400	Idle delivery:
electromagnet Volt: 12 Overflow : 41.7083.40 quantity cm3/10s: (27.8097.30)	Damper set qty.:
2nd speed 1/min: 2200 +	2nd speed 1/min: 1000 Shutoff
electromagnet Volt: 12 Overflow: 55.60138.90	electromagnet Volt: 12 Del. quantity cm3/: 11.0013.00
quantity cm3/10s: (41.70152.90)  Delivery—quant. and breakaway char.:	1000s.: (8.0016.00) LFG-setting:
+	solidale con carcassa: Idle delivery:
2nd speed 1/min: 2750 Shutoff electromagnet Volt: 12	1st speed 1/min: 450 Shutoff
Del. quantity cm3/: 0.006.00 + 1000S.: (0.006.00)	electromagnet Volt: 12 Del. quantity cm3/: 9.0011.00
5th speed 1/min: 2600 +	1000s.: (6.0014.00)

terza fermo della portata stop (EGR set) scarico) (ARF) High Idle: 1/mi: 525 1st speed gaz d'échappement-ARF) Shuroff electromagnet Volt: 12 1st speed 1/min: 1000 Del. quantity cm3/: 9.00...11.00 1000s.: (6.00...14.00) Shutoff electromagnet Volt: 12 Del. quantity cm3/: 27.00...29.00 Residual: 1000s.: (25.00...31.00) 1.Rotacao 1/min: 575 Automatic starting fuel delivery: Shutoff electromagnet Volt: 12 Del. quantity cm3/: 5.50...6.50 1000s.: (4.00...8.00) 1st speed 1/min: 180 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...75.00 1000s.: (35.00...75.00) 1/min: 525 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.30...9.30 1000s.: (5.80...10.80) 2nd speed 1/min: 380 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...50.00 1000s.: (30.00...50.00) Load-dependent start of delivery: Inj.-qty.dif.measurement: 1/min: 1250 1st speed 1/min: 100 4th speed Inj.-qty. cm3/ : 5.00...7.00 # Shutoff difference 1000S.: (6.00...6.00) electromagnet Volt: 12 Shutoff Del. quantity cm3/: 35.00...65.00 1000s.: (35.00...65.00) electromagnet Volt: 12 5th speed 1/min: 1250 cm3/: 0.00...3.00 \*Inj. aty. Shutoff electromagnet: difference 1000S:: (0.00...3.00)
Timing valve Volt: 1
Shutoff Cut-in min voltage : 10.0 electromagnet Volt: 12 Rated voltage : 12.0 TD-travel dif.measurement: Mounting and assembly dimensions: correttore anticipo iniezione (SV): 1st speed 1/min: 1250 Designation mm: 3.2...3.4 mm: 5.1...5.5 mm: 1.1...1.5 TD-travel : 0.60...0.80 # K mm: (0.60...0.80) KF difference MS Shutoff electromagnet Volt: 12 3rd speed 1/min: 1250 Remarks: : 1.80...2.20 \* TD-travel difference mm: (1.50...2.50) Shutoff On initial measurement, screw in electromagnet Volt: 12 residual-quantity adjusting screw 2 mm. SP press.—dif.measurement: Following pump adjustment, screw out pompa di mandata (FP): residual-quantity adjusting screw 2 mm. 1st speed 1/min: 1250 Supply pump-: 1.10...1.50 \* pressure difference bar: (0.90...1.70) Shutoff electromagnet Volt: 12 Part-load del.at 3rd inj.-qty.

Note inst. in remarks column

Test scheet : VWW 1.9 C6 : 03.02.92 Edition replaces : 10.12.91 (alibrating oil : ISO-4113

: VE4/9F2200R420-4 Injection pump Type number : 0 460 494 287

Customer Part-No. :

Customer-specific information

Customer

: 028.D - 1.9L. Engine

KW: 55 Power

**TEST BENCH REQUIREMENTS** 

Overflow restricti: 1 463 456 303

Calibrating-oil return temp.

with thermometer : 40.00...48.00 Electronically : 42.00...50.00

Inlet press., bar: 0.30...0.40

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

bar: 147.00...150.00 Pressure

Test inj. tubing : 1 680 750 017

Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length

Start of delivery

Indicator setting Piston stroke mm: 1.0 Outlet. : A

Injection-pump setting values Test specifications in parentheses

Timing-device travel

1/min: 1250

Setting value mm: 3.50...3.90

Shutoff

electromagnet Volt: 12

Supply-pump pressure

1/min: 1250 Speed

Setting value bar: 5.50...6.10

Shutoff

electromagnet Volt: 12

Full-load del. w/out charge press.:

1/min: 1250 Speed

Del. quantity cm3/

1000s.: 42.00...43.00

Shutoff

electromagnet Volt: 12 cm3/: 2.5 Dispersion 1000s.: (3.0)

Residual-Delivery Setting

Speed 1/min: 575

Del. quantity cm3/

1000s.: 5.50...6.50

Shutoff

electromagnet Volt: 12

Full-load speed regulation

1/min: 2525 Speed

Del. quantity cm3/ 1000s.: 10.00...14.00

Shutoff

electromagnet Volt: 12

Start:

Speed 1/min: 100

Del. quantity cm3/: 35.00...65.00 mind 1000s.: 35.00

Shutoff

electromagnet Volt: 12

Load-dependent start of delivery:

Inj.-qty.dif.measurement:

1/min: 1250 Speed Charge press hPa: 12

Inj.-qty. cm3/ difference 1000S:: 4.00...10.00

Shutoff

electromagnet Volt: 12 TD-travel dif.measurement

correttore anticipo iniezione (SV) 1.Speed 1/min: 1250

TD-travel

mm: 0.60...0.80 difference

Shutoff

electromagnet Volt: 12

+	Shutoff
Inspection-pump test specifications +	electromagnet Volt: 12
Test specifications in parentheses	Del. quantity cm3/: 0.006.00
	1000\$.: (0.006.00)
Timing-device characteristic:	5th speed 1/min: 2525
† · · · · · · · · · · · · · · · · · · ·	Shutoff
2nd speed 1/min: 2000 +	electromagnet Volt: 12
TD travel mm: 6.507.30	Del. quantity cm3/: 10.0014.00
mm: (6.207.60)	1006s.: (8.0016.00)
Shutoff	8th speed 1/min: 2425
electromagnet Volt: 12	Shutoff
3rd speed 1/min: 1250 +	electromagnet Volt: 12
TD travel mm: 3.503.90 +	Del. quantity cm3/: 19.0029.00
mm: (3.904.40)	100cs.: (18.0030.00)
Shutoff	9th speed 1/min: 2200
electromagnet Volt: 12	Shutoff
4th speed 1/min: 750	electromagnet Volt: 12
TD travel mm: 1.402.20	Del. quantity cm3/: 36.7038.70
mm: (1.102.50)	1000s.: (35.5039.90)
Shutoff	12th speed 1/min: 1250
electromagnet Volt: 12	Shutoff
	electromagnet Volt: 12
Supply-pump pressure characteristic: +	Del. quyntity cm3/: 42.0043.00
	10005.: (40.3044.70)
1st speed 1/min: 750	15th speed 1/min: 750
Supply-pump +	Shutoff
pressure bar: 4.304.90	electromagnet Volt: 12
bar: (4.105.10)	Del. quantity cm3/: 33.7036.70
Shutoff	1000\$:: (32.2038.20)
electromagnet Volt: 12	20th speed 1/min: 400
2nd speed 1/min: 1250	
	Shutoff
Supply-pump	electromagnet Volt: 12
pressure bar: 5.506.10	Del. quantity cm3/: 35.5041.50
bar: (5.306.30)	1000s.: (33.0044.00)
Shutoff +	95-al- al-1-65
electromagnet Volt: 12	Mech. shutoff:
3rd speed 1/min: 2200	m1
Supply-pump +	Electr. shutoff:
pressure bar: 7.708.30	4
bar: (7.508.50)	1st speed 1/min: 450
Shutoff	Del. quantity cm3/: 0.003.00
electromagnet Volt: 12	10008.: (0.003.00)
<b>.</b>	Shutoff
Overlow quantity at overflow valve:	electromagnet volt: -
+	
1st speed 1/min: 400	Damper set qty.:
Shutoff	
electromagnet Volt: 12	LFG-setting:
Overflow : 41.7083.40	solidale con carcassa:
quantity cm3/10s: (27.8097.30)	Idle delivery:
2nd speed 1/min: 2200 +	·
Shutoff	1st speed 1/min: 450
electromagnet Volt: 12	Shutoff
Overflow : 55.60138.90 +	electromagnet Volt: 12
quantity cm3/10s: (41.70152.90)	Del. quantity cm3/: 9.0011.00
+	1000s.: (6.0014.00)
Delivery-quant. and breakaway char.:	
1	High Idle:
+	
2nd speed 1/min: 2750 +	1st speed 1/mi: 525
	· · · · · · · · · · · · · · · · · · ·

N15

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 9.00...11.00 1000S.: (6.00...14.00) Residual: 1.Rotacao 1/min: 575 Shutoff 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 7.30...9.30 1000S.: (5.80...10.80) Load-dependent start of delivery: Inj.—qty.dif.measurement: 1st speed 1/min: 1250 Inj.—qty. cm3/ : 4.00...10.00# difference 1000S: (3.00...11.00) Shutoff electromagnet Volt: 12 5th speed 1/min: 1250 Inj.-qty. cm3/: 0.00...3.00\* difference 1000s.: (0.00...3.00) Shutoff electromagnet Volt: 12 TD-travel dif.measurement: correctore anticipo injezione (SV): 1st speed 1/min: 1250 TD-travel : 0.60...0.80# difference mm: (0.60...0.80) Shutoff electromagnet Volt: 12
3rd speed 1/min: 1250
TD-travel : 1.80...2.20\*
difference mm: (1.50...2.50) mm: (1.50...2.50) SP press.—dif.measurement: pompa di mandata (FP): 1/min: -1/min: 1250 1st speed 3rd speed Supply pump-: 1.10...1.50\* pressure difference bar: (0.90...1.70) Shutoff electromagnet Volt: 12 Part-load del.at 3rd inj.-qty. terza fermo della portata stop (EGR set) scarico) (ARF) qaz d'échappement-ARF) 1st speed 1/min: 1000

Shutoff electromagnet Volt: 12 Del. quantity cm3/: 27.00...29.00 1000s.: (25.00...31.00) Automatic starting fuel delivery: 1/min: 180 1st speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...75.00 1000s.: (35.00...75.00) 1/min: 380 2nd speed Shutoff electromagnet Volt: 12 Del. quantity cm3/: 30.00...50.00 1000s.: (30.00...50.00) 4th speed 1/min: 100 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 35.00...65.00 1000s.: (35.00...65.00) Shutoff electromagnet: Cut-in min voltage Rated voltage Mounting and assembly dimensions: Designation mm: 3.2...3.4 nm: 5.1...5.5 mm: 1.1...1.5 KF

Remarks:

MS

Overflow restriction 0.55 mm - Part No.

On initial measurement, screw in residual-quantity adjusting screw 2 mm.

Following pump adjustment, screw out residual-quantity adjusting screw 2 mm.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test scheet : OPE 1,7 D Edition : 03.02.92 : 03.12.91 replaces Calibrating oil : 1SO-4113 Injection pump : VE4/9F2300R443 Type number : 0 460 494 293 Customer Part-No. : Customer-specific information Customer : OPEL Engine : 17 YD TEST BENCH REQUIREMENTS Overflow restricti: 1 463 456 303 Calibrating oil °C return temp. with thermometer : 40.00...48.00 Electronically : 42.00...50.00 Inlet press., bar: 0.30...0.40 Calibrating nozzle-holder : 1 688 901 000 assembly Opening bar: 147.00...150.00 Pressure Test ini. tubing : 1 680 750 017 Outside diameter : 6.00 x Wall thickness : 2.00 mm: 840 x Length Start of delivery Prestroke mm: -(from BDC): -Injection pump setting values Test specifications in parentheses Timing-device travel 1/min: 1000 Speed Setting value mm: 2.00...2.40

Volt: 12

electromagnet Volt: 12

Supply-pump pressure 1/min: 1000 Setting value bar: 4.00...4.60 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Full-load del. w/out charge press.: 1/min: 1300 Speed Del. quantity cm3/ 1000s.: 31,2...32,2 KSB/AFB 11 valve Volt: 12 Shutoff electromagnet Volt: 12 cm3/: 2,5 1000s.: (2,5) Dispersion Low-idle speed regulation 1/min: 450 Speed Del. quantity cm3/ 1000s.: 8.00...10.00 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 2,5 1000s.: (3,0) Residual-Delivery Setting 1/min: 500 Speed Del. quantity\_cm3/ 1000s.: 1.50...2.50 KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Full-load speed regulation 1/min: 2735 Del. quantity cm3/ 1000s.: 7.00...11.00 KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Start: 1/min: 100 Speed Del. quantity cm3/: 28,0...44,0 1000s.: mind KSB/AFB Valve Volt: 12

AFB/AFB

valve Shutoff

mm: 0.90...1.70 Shutoff TD travel mm: (0.60, ..., 2.00)electromagnet Volt: 12 KSB/AFB Load-dependent start of delivery: valve Volt: 12 Ini.-qty.dif.measurement: Shutoff electromagnet Volt: 12 Speed 1/min: 1000 5th speed 1/min: 1000 Charge press hPa: 12 TD travel mm: 2,00...2,40 mm: (1,50...2,90) Inj.-gty. cm3/difference 1000s.: 11.00...19.00 KSB/AFB KSB/AFB valve Volt: 12 Volt: 12 Shutoff valve Shutoff electromagnet Volt: 12 6th speed 1/min: 2000 electromagnet Volt: 12 TD-travel dif.measurement TD travel im: 6,70...7,50 correttore anticipo iniezione (SV) mm: -1.Speed 1/min: 1000 KSB/AFB TD-travel Volt: 12 valve mm: 0.60...0.80 difference Shutoff KSB/AFB electromagnet Volt: 12 1/min: 2300 mm: 7,50...8,30 mm: (7,20...8,60) Volt: 12 valve 7.Rotacao Shutoff TD travel electromagnet Volt: 12 SP press.-dif.measurement KSB/AFB pompa di mandata (FP) valve Volt: 12 1.Speed 1/min: 1000 Shutoff Supply pump electromagnet Volt: 12 pressure difference bar: 0,10...0,30 Supply-pump pressure characteristic: KSB/AFB valve Volt: 12 1/min: 2000 1st speed Shutoff Supply-pump electromagnet Volt: 12 pressure bar: 7.60...8.20 KSB/AFB Inspection-pump test specifications Test specifications in parentheses valve Volt: 12 Shutoff electromagnet Volt: 12 2nd speed 1/min: 1000 Timing device characteristic: 2nd speed Supply-pump bar: 4.00...4.60 1/min: 300 1st speed pressure TD travel mm: 0,80...3,20 KSB/AFB mm: valve Volt: 12 KSB/AFB Shutoff electromagnet Volt: 12 valve Volt: -1/min: 800 electromagnet Volt: 12 3rd speed 1/min: 800 2nd speed Supply-pump TD travel mm: 1,90...4,30 pressure bar: 3.40...4.00 mm: -KSB/AFB KSB/AFB valve Volt: 12 valve Volt: -Shutoff Shutoff electromagnet Volt: 12 electromagnet Volt: 12 1/min: 1000 Overlow quantity at overflow valve: 3rd speed mm: 1,90...4,30 TD travel 1/min: 700 1st speed mm: -KSB/AFB KSB/AFB Volt: 12 valve Volt: valve Shutoff Shutoff electromagnet Volt: 12 4th speed 1/min: 800 electromagnet Volt: 12

N18

	41.7083.40	1st speed 1/min: 450
quantity cm3/10s:	(26.7098.40)	<pre>Del. quantity cm3/: 0.003.00</pre>
2nd speed 1/min: 7	2300 +	1000s.: (0.003.00)
KSB/AFB	4.	Shutoff
valve Volt:	12 +	electromagnet volt: -
Shutoff	12	KSB/AFB
electromagnet Volt:	12 170 00	valve Volt: -
	55.60139.00	<b>.</b>
quantity cm3/10s:	(40.60154.50)	Damper set qty.:
Daliston was and I	hnaakayay ahan	1 FC anthing
Delivery-quant, and b	breakaway char.:	LFG-setting:
	Ť	solidale con carcassa: Idle delivery:
1nd speed 1/min: 7	2735 I	Tute delivery.
KSB/AFB	1	1st speed 1/min: 450
valve Volt:	12 Í I	KSB/AFB
Shutoff	· 1	valve Volt: 12
electromagnet Volt:	12	Shutoff
Del. quantity cm3/:	7.0011.00	electromagnet Volt: 12
1000s.:	(5,0013,00)	Del. quantity cm3/: 8.0010.00
2nd speed 1/min: 2	2575	Del. quantity cm3/: 8.0010,00 1000s.: (6.0012.00)
KSB/AFB	1	Dispersion cm3/: 2,5
valve Volt:	12 1	1000s.: (3,0)
Shutoff	+	
elactromagnet Volt:	12	Residual:
Del. quantity cm3/:	18,524,50	
1050s.: -	_	1.Rotacao 1/min: 500
3rd speed 1/min: 7	2300 +	KSB/AFB
KSB/AFB	2300 12 12 12 27,228,8 (26,230,8) 2000	valve Volt: 12
valve Volt:	12 +	Shutoff
Shutoff	†	electromagnet Volt: 12
electromagnet Volt:	12 +	Del. quantity cm3/: 1.502.50
Del. quantity cm3/: 2	27,228,8	10005.: (0.004.00)
1000S.:	(26,230,8) +	2nd speed 1/min: 750
4th speed 1/min: 7	5000 <del>†</del>	KSB/AFB
KSB/AFB	42 Ť	valve Volt: 12
valve Volt:	12 +	Shutoff
Shutoff	13	electromagnet Volt: 12
electromagnet Volt:	24 50 20 50	Del. quantity cm3/: 0.001.60
Del. quantity cm3/: 7	(25.7030.30)	1000s.: -
5th speed 1/min:	1700	Load-dependent start of delivery:
KSB/AFB	1300 I	Inj.—qty.dif.measurement:
valve Volt:	12 I	ing. qcy.urr.measurement.
Shutoff	" I	1st speed 1/min: 1000
electromagnet Volt:	12	Injqty. cm3/ : 8.0010.00
Del. quantity cm3/:	31.232.2	difference 1000s.: -
1000s.:	(29,434,0)	KSB/AFB
6th speed 1/min: 7	700	valve Volt: 12
KSB/AFB	1	Shutoff
valve Volt:	12 🕹	electromagnet Volt: 12
Shutoff	1	2nd speed 1/min: 1000
electromagnet Volt:	12 👢	Injaty. cm3/: 11,019,0
Del. quantity cm3/: 2	24.5027.50 +	difference 1000s.: -
1000s.:	(23.0029.00)	KSB/AFB
	+	valve Volt: 12
Mech. shutoff:	+	Shutoff
	+	electromagnet Volt: 12
Electr. shutoff:	+	
	+	TD-travel dif.measurement:

1st speed 1/min: 1000 TO-travel : 0.60...0.80 mm: difference KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 SP press.-dif.measurement: pompa di mandata (FP): 1/min: 1000 1st speed Supply pumppressure : 0.10...9.30 difference bar: -KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Automatic starting fuel delivery: 1st speed 1/min: 400 KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Del. quantity cm3/: 25.00...35.00 1000s.: -2nd speed 1/min: 500 KSB/AFB Volt: 12 valve Shutoff electromagnet Volt: 12 Del. quantity cm3/: 22.50...32.50 1000s.: -1/min: 100 3rd speed KSB/AFB valve Volt: 12 Shutoff electromagnet Volt: 12 Del. quantity cm3/: 28.00...44.00 Shutoff electromagnet: Cut-in : 10,0 min voltage : 12,0 Rated voltage Mounting and assembly dimensions: Designation mm: 3,2...3,4 mm: 5,3...5,7 mm: 0,7...1,1 K KF MS XK mm: -XL. mm: -

correttore anticipo iniezione (SV):

Remarks:

Overflow restriction 0.55 mm - Part No. ..303